

W W
352
L948t
1922

TRANSPOSITIONS
AND TABLES
—
LUECK

52320090R



NLM 05274161 1

NATIONAL LIBRARY OF MEDICINE

SURGEON GENERAL'S OFFICE
LIBRARY.

Section

No. 113,
W. D. S. G. O.

No. 243249

8-513

LIBRARY
SEP 28 1922
SURGEON GENERAL'S
OFFICE

Transpositions and Tables

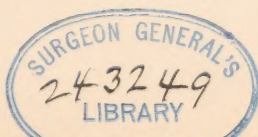
A simple and comprehensive treatise on the laws of Transpositions to assist Refractionists, Opticians, Students, Shopmen and all who have to do with optical lenses.

BY
EDWARD J. LUECK,
Collaborator
"Optical Shop Practice"

FULLY ILLUSTRATED

PUBLISHED BY
The PROFESSIONAL PRESS, Inc.
CHICAGO, ILL.

5 19227



WW
352
L948t
1922
film 9600 item 3

Copyrighted 1922

MAY -9 '22 ✓

R

©ClA 674389

no 2

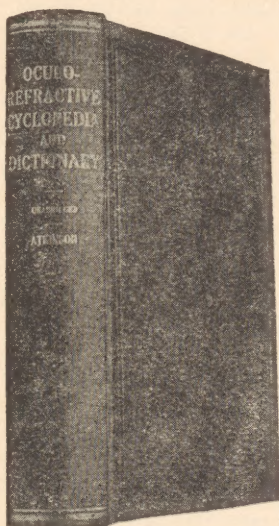
I N D E X

Chapter	Page
I DEFINITION OF TRANSPOSITION, ITS NECESSITY...	5
Axis	7
II PLUS ON PLUS COMPOUNDS.....	9
Table 1 Sphs. +0.12 to +1.62 Combined with Cyls. +0.12 to +1.12.	11
Table 2 Sphs. +1.75 to +4.25 Combined with Cyls. +0.12 to +1.12.	12
Table 3 Sphs. +0.12 to +1.62 Combined with Cyls. +1.25 to +2.25	13
Table 4 Sphs. +1.75 to +4.25 Combined with Cyls. +1.25 to +2.25	14
Table 5 Sphs. +0.12 to +1.62 Combined with Cyls. +2.50 to +4.25	15
Table 6 Sphs. +1.75 to +4.25 Combined with Cyls. +2.50 to +4.25	16
III PLUS ON MINUS COMPOUNDS	17
Table 1 Sphs. +0.12 to +1.62 Combined with Cyls. -0.12 to -1.12.	21
Table 2 Sphs. +1.75 to +4.25 Combined with Cyls. -0.12 to -1.12	22
Table 3 Sphs. +0.12 to +1.62 Combined with Cyls. -1.25 to -2.25.	23
Table 4 Sphs. +1.75 to +4.25 Combined with Cyls. -1.25 to -2.25.	24
Table 5 Sphs. +0.12 to +1.62 Combined with Cyls. -2.50 to -4.25.	25
Table 6 Sphs. +1.75 to +4.25 Combined with Cyls. -2.50 to -4.25.	26
IV MINUS ON PLUS COMPOUNDS.....	27
Table 1 Sphs. -0.12 to -1.62 Combined with Cyls. +0.12 to +1.12	31
Table 2 Sphs. -1.75 to -4.25 Combined with Cyls. +0.12 to +1.12	32
Table 3 Sphs. -0.12 to -1.62 Combined with Cyls. +1.25 to +2.25.	33
Table 4 Sphs. -1.75 to -4.25 Combined with Cyls. +1.25 to +2.25	34
Table 5 Sphs. -0.12 to -1.62 Combined with Cyls. +2.50 to +4.25.	35
Table 6 Sphs. -1.75 to -4.25 Combined with Cyls. +2.50 to +4.25.	36
V MINUS ON MINUS COMPOUNDS.....	37
Table 1 Sphs. -0.12 to -1.62 Combined with Cyls. -0.12 to -1.12.	39
Table 2 Sphs. -1.75 to -4.25 Combined with Cyls. -0.12 to -1.12.	40
Table 3 Sphs. -0.12 to -1.62 Combined with Cyls. -1.25 to -2.25.	41
Table 4 Sphs. -1.75 to -4.25 Combined with Cyls. -1.25 to -2.25.	42
Table 5 Sphs. -0.12 to -1.62 Combined with Cyls. -2.50 to -4.25.	43
Table 6 Sphs. -1.75 to -4.25 Combined with Cyls. -2.50 to -4.25.	44
VI PLAIN CYLINDERS	45
Table for Plus and Minus Cylinders	48
VII CROSSED CYLINDERS	50
Table 1 Cyls. +0.25 to +3.00 Combined with Cyls. +0.25 to +0.75.	53
Table 2 Cyls. +0.25 to +3.00 Combined with Cyls. +1.00 to +1.50.	54
Table 3 Cyls. +0.25 to +3.00 Combined with Cyls. +1.75 to +2.25.	55
Table 4 Cyls. +0.25 to +3.00 Combined with Cyls. +2.50 to +3.00	56
Table 1 Cyls. -0.25 to -3.00 Combined with Cyls. +0.25 to +0.75.	58
Table 2 Cyls. -0.25 to -3.00 Combined with Cyls. +1.00 to +1.50.	59
Table 3 Cyls. -0.25 to -3.00 Combined with Cyls. +1.75 to +2.25.	60
Table 4 Cyls. -0.25 to -3.00 Combined with Cyls. +2.50 to +3.00.	61
VIII CURVES	62
IX MISCELLANEOUS	70

***The Mainspring of Optical Knowledge —
A Goldmine of Information***

Endorsed by

***Practicing Optometrists, Students and
Pedagogues***



***Oculo-Refractive
CYCLOPEDIA
AND
DICTIONARY***

BY

***THOS. G. ATKINSON,
M. D. B. Sc.***



**Complete, Comprehensive. An Ever-Ready
Reference Book Giving All Words and
Terms. Profusely Illustrated**

PRICE \$5.00
From Your Jobber or

The PROFESSIONAL PRESS, Inc.

**17 NORTH WABASH AVENUE
CHICAGO**

CHAPTER I.

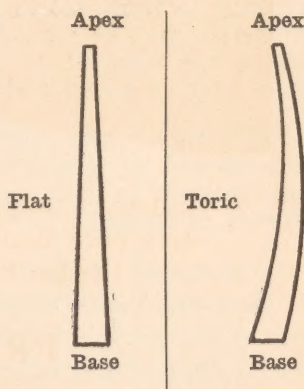
TRANSPOSITIONS

Definition of Transposition, Its Necessity, Axis.

Transposition means to change the surface of a lens without changing its value. In other words, a lens that will give the same result when placed before the eye. In transposing the powers of the meridians remain the same.

The transposition of a prescription has no effect on a prism lens. That is to say the position of apex and base, and the degree of prism remain the same. In other words in transpositions, you do not have to take the prism into consideration.

A knowledge, and that an accurate one, of transpositions is absolutely essential for refractionists, optometrists, opticians, surface grinders, prescription clerks and all who have to do with optical lenses. These days Transposition is an every day occurrence, and a necessity in the prescription shops and jobbing houses, due to the large quantity of prescriptions that have to be transposed, especially in connection with Kryptoks.



We will not go into detail here on Kryptok blanks, its whys and wherefores, but only in its connection with Transpositions.

On all torics, plain cylinders and compound prescriptions the cylinders must be ground on the inside of the blanks.

The manufacturers of Kryptok blanks warn us not to grind cylinders on the disc, or segment side of the blank, as the disc is made of a softer substance of glass than the major portion of the blank, which is the regular crown glass.

The reasons why we are warned not to grind cylinders on the segment side of Kryptok blanks is that the result will be two different powers on your reading portion, (in opposite meridians), and the segment will be slightly oval in shape.

Therefore on Kryptoks all prescriptions that would require plus (+) cylinders of necessity must be transposed into minus (—) cylinders.

The Transposition of your prescription must always precede the selection of your Kryptok blank, in order to know the proper curve to be ground on the disc or segment side of your blank.

On prescriptions that require minus (—) cylinders and you want to grind on one-piece or depressed bifocals, it is necessary to transpose to plus (+) cylinders, as minus (—) cylinders cannot be ground on one-piece or depressed bifocals, because the segment or reading portion is ground on the minus (—) or concave side.

This would also apply to cement bi-focals, as the segments should be placed on the inside of the lens, therefore it is necessary to transpose your prescriptions into plus (+) cylinder compounds.

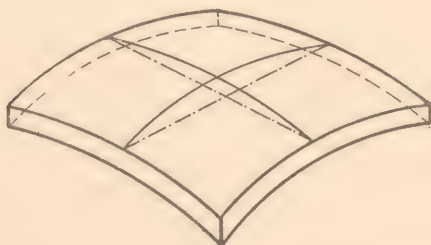
Considerable difficulty arises on many occasions due to the improper Transposition of prescriptions. There is very little excuse for this however, if one would only take a little time to acquaint himself with the "laws of Transpositions."

These laws or rules, as you may choose to call them, are few and not very difficult to understand.

We will endeavor, in this book, to make these rules so plain and so simple and comprehensive that a child can very easily grasp and understand them.

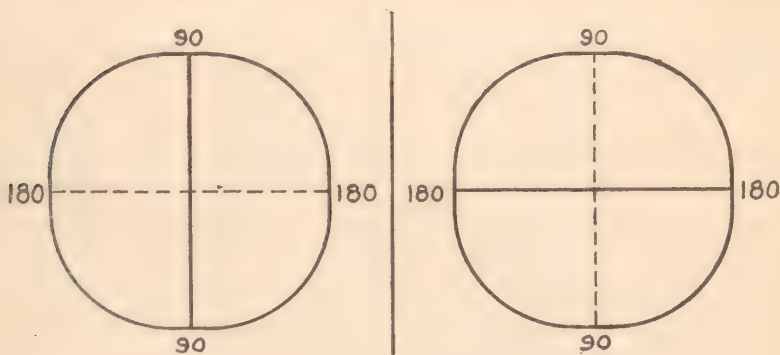
If these rules are followed closely, very little difficulty should be experienced in Transposing prescriptions.

In Transposing it is necessary to change cylinders and axis to opposite cylinder and opposite axis; in other words, if your original prescription calls for a plus (+) cylinder, the opposite will be a minus (—) cylinder. If your original prescription calls for minus (—) cylinder, the opposite will be a plus (+) cylinder.



A COMPOUND TORIC LENS

In regard to opposite axis, it is always a difference of 90° . For instance, if your original prescription calls for axis 90° your Transposed prescription will be 180° and if your original prescription calls for 180° your Transposed prescription will be 90° , as shown in the accompanying diagram:



The heavy black line in the axis 90° meridian, represents the axis of the original prescription; and the dotted line in the axis 180° meridian, represents the axis of the Transposed prescription, and vice versa.

How to get the opposite axis is as follows:

If the axis is from 0° to 90° , add 90° to your original axis, and this will give you the axis of your new or Transposed prescription, and if the axis is 90° to 180° you subtract 90° from your original axis, and the remainder will be the axis of your new or Transposed prescription.

AXIS 0° TO AXIS 90°
 Original Prescription axis 80°
 Add 90°

Transposed Prescription axis 170°

AXIS 90° TO AXIS 180°
 Original Prescription axis 165°
 Subtract 90°

Transposed Prescription axis 75°

AXIS CHART

Axis before Transposing	Axis after Transposing
0°	90°
5°	95°
10°	100°
15°	105°
20°	110°
25°	115°
30°	120°
35°	125°
40°	130°
45°	135°
50°	140°
55°	145°
60°	150°
65°	155°
70°	160°
75°	165°
80°	170°
85°	175°
90°	180°

The above chart gives the axis before and after Transpositions for every five degrees from 0° to 180° .

CHAPTER II.

TRANSPOSING PLUS ON PLUS

$$(+ \ominus +)$$

To transpose a plus on plus prescription, you add the power of sphere and the power of the cylinder together, this total is the sphere of your Transposed lens. After you have done this, combine with this, a cylinder of the same power as cylinder of original prescription but opposite sign and opposite axis.

We will now take a few examples on plus on plus compound prescriptions, and transpose them into compound prescriptions with minus cylinders.

Example No. 1

Original Prescription	+2.00 Sph.	⊖+1.00 Cyl.	axis 95°
Add Cylinder	+1.00		Subtract 90°
Transposed is	+3.00 Sph.	⊖1.00 Cyl.	axis 5°

Example No. 2

Original Prescription	+1.75 Sph.	⊖+1.50 Cyl.	axis 180°
Add Cylinder	+1.50		Subtract 90°
Transposed is	+3.25 Sph.	⊖1.50 Cyl.	axis 90°

Example No. 3

Original Prescription	+0.75 Sph.	⊖+1.25 Cyl.	axis 45°
Add Cylinder	+1.25		Add 90°
Transposed is	+2.00 Sph.	⊖1.25 Cyl.	axis 135°

Example No. 4

Original Prescription	+3.25 Sph.	⊖+1.00 Cyl.	axis 60°
Add Cylinder	+1.00		Add 90°
Transposed is	+4.25 Sph.	⊖1.00 Cyl.	axis 150°

Example No. 5

Original Prescription	+0.25 Sph. $\ominus$ +0.50 Cyl. axis 165°
Add Cylinder	+0.50 Subtract 90°

Transposed is +0.75 Sph. $\ominus$ -0.50 Cyl. axis 75°

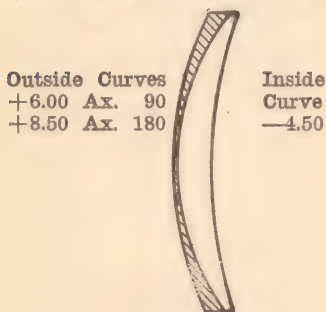
Example No. 6

Original Prescription	+1.50 Sph. $\ominus$ +2.50 Cyl. axis 90°
Add Cylinder	+2.50 Add 90°

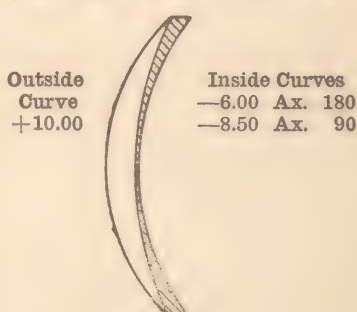
Transposed is +4.00 Sph. $\ominus$ -2.50 Cyl. axis 180°

ILLUSTRATION OF EXAMPLE NO. 6 (TORIC)

Original Prescription
+1.50 Sph. $\ominus$ +2.50 Cyl. Ax. 90



Transposed Prescription
+4.00 Sph. $\ominus$ -2.50 Cyl. Ax. 180



Foot-note:—The weaker curve of the Cylinder is represented by the weaker curve of the shaded portion of illustration. This applies to above and all similar illustrations.

Transposition Table No. 1.

(+○+)

Spheres From +0.12 to +1.62

Combined With

Cylinders From +0.12 to +1.12

	+0.12C	+0.25C	+0.37C	+0.50C	+0.62C	+0.75C	+0.87C	+1.00C	+1.12C
+0.12S	+0.25S -0.12C	+0.37S -0.25C	+0.50S -0.37C	+0.62S -0.50C	+0.75S -0.62C	+0.87S -0.75C	+1.00S -0.87C	+1.12S -1.00C	+1.25S -1.12C
+0.25S	+0.37S -0.12C	+0.50S -0.25C	+0.62S -0.37C	+0.75S -0.50C	+0.87S -0.62C	+1.00S -0.75C	+1.12S -0.87C	+1.25S -1.00C	+1.37S -1.12C
+0.37S	+0.50S -0.12C	+0.62S -0.25C	+0.75S -0.37C	+0.87S -0.50C	+1.00S -0.62C	+1.12S -0.75C	+1.25S -0.87C	+1.37S -1.00C	+1.50S -1.12C
+0.50S	+0.62S -0.12C	+0.75S -0.25C	+0.87S -0.37C	+1.00S -0.50C	+1.12S -0.62C	+1.25S -0.75C	+1.37S -0.87C	+1.50S -1.00C	+1.62S -1.12C
+0.62S	+0.75S -0.12C	+0.87S -0.25C	+1.00S -0.37C	+1.12S -0.50C	+1.25S -0.62C	+1.37S -0.75C	+1.50S -0.87C	+1.62S -1.00C	+1.75S -1.12C
+0.75S	+0.87S -0.12C	+1.00S -0.25C	+1.12S -0.37C	+1.25S -0.50C	+1.37S -0.62C	+1.50S -0.75C	+1.62S -0.87C	+1.75S -1.00C	+1.87S -1.12C
+0.87S	+1.00S -0.12C	+1.12S -0.25C	+1.25S -0.37C	+1.37S -0.50C	+1.50S -0.62C	+1.62S -0.75C	+1.75S -0.87C	+1.87S -1.00C	+2.00S -1.12C
+1.00S	+1.12S -0.12C	+1.25S -0.25C	+1.37S -0.37C	+1.50S -0.50C	+1.62S -0.62C	+1.75S -0.75C	+1.87S -0.87C	+2.00S -1.00C	+2.12S -1.12C
+1.12S	+1.25S -0.12C	+1.37S -0.25C	+1.50S -0.37C	+1.62S -0.50C	+1.75S -0.62C	+1.87S -0.75C	+2.00S -0.87C	+2.12S -1.00C	+2.25S -1.12C
+1.25S	+1.37S -0.12C	+1.50S -0.25C	+1.62S -0.37C	+1.75S -0.50C	+1.87S -0.62C	+2.00S -0.75C	+2.12S -0.87C	+2.25S -1.00C	+2.37S -1.12C
+1.37S	+1.50S -0.12C	+1.62S -0.25C	+1.75S -0.37C	+1.87S -0.50C	+2.00S -0.62C	+2.12S -0.75C	+2.25S -0.87C	+2.37S -1.00C	+2.50S -1.12C
+1.50S	+1.62S -0.12C	+1.75S -0.25C	+1.87S -0.37C	+2.00S -0.50C	+2.12S -0.62C	+2.25S -0.75C	+2.37S -0.87C	+2.50S -1.00C	+2.62S -1.12C
+1.62S	+1.75S -0.12C	+1.87S -0.25C	+2.00S -0.37C	+2.12S -0.50C	+2.25S -0.62C	+2.37S -0.75C	+2.50S -0.87C	+2.62S -1.00C	+2.75S -1.12C

The letter S represents Sphere

The letter C represents Cylinder

Transposition Table No. 2.

(+C+)

Spheres From +1.75 to +4.25
Combined With
Cylinders From +0.12 to +1.12

	+0.12C	+0.25C	+0.37C	+0.50C	+0.62C	+0.75C	+0.87C	+1.00C	+1.12C
+1.75S	+1.87S -0.12C	+2.00S -0.25C	+2.12S -0.37C	+2.25S -0.50C	+2.37S -0.62C	+2.50S -0.75C	+2.62S -0.87C	+2.75S -1.00C	+2.87S -1.12C
+1.87S	+2.00S -0.12C	+2.12S -0.25C	+2.25S -0.37C	+2.37S -0.50C	+2.50S -0.62C	+2.62S -0.75C	+2.75S -0.87C	+2.87S -1.00C	+3.00S -1.12C
+2.00S	+2.12S -0.12C	+2.25S -0.25C	+2.37S -0.37C	+2.50S -0.50C	+2.62S -0.62C	+2.75S -0.75C	+2.87S -0.87C	+3.00S -1.00C	+3.12S -1.12C
+2.12S	+2.25S -0.12C	+2.37S -0.25C	+2.50S -0.37C	+2.62S -0.50C	+2.75S -0.62C	+2.87S -0.75C	+3.00S -0.87C	+3.12S -1.00C	+3.25S -1.12C
+2.25S	+2.37S -0.12C	+2.50S -0.25C	+2.62S -0.37C	+2.75S -0.50C	+2.87S -0.62C	+3.00S -0.75C	+3.12S -0.87C	+3.25S -1.00C	+3.37S -1.12C
+2.50S	+2.62S -0.12C	+2.75S -0.25C	+2.87S -0.37C	+3.00S -0.50C	+3.12S -0.62C	+3.25S -0.75C	+3.37S -0.87C	+3.50S -1.00C	+3.62S -1.12C
+2.75S	+2.87S -0.12C	+3.00S -0.25C	+3.12S -0.37C	+3.25S -0.50C	+3.37S -0.62C	+3.50S -0.75C	+3.62S -0.87C	+3.75S -1.00C	+3.87S -1.12C
+3.00S	+3.12S -0.12C	+3.25S -0.25C	+3.37S -0.37C	+3.50S -0.50C	+3.62S -0.62C	+3.75S -0.75C	+3.87S -0.87C	+4.00S -1.00C	+4.12S -1.12C
+3.25S	+3.37S -0.12C	+3.50S -0.25C	+3.62S -0.37C	+3.75S -0.50C	+3.87S -0.62C	+4.00S -0.75C	+4.12S -0.87C	+4.25S -1.00C	+4.37S -1.12C
+3.50S	+3.62S -0.12C	+3.75S -0.25C	+3.87S -0.37C	+4.00S -0.50C	+4.12S -0.62C	+4.25S -0.75C	+4.37S -0.87C	+4.50S -1.00C	+4.62S -1.12C
+3.75S	+3.87S -0.12C	+4.00S -0.25C	+4.12S -0.37C	+4.25S -0.50C	+4.37S -0.62C	+4.50S -0.75C	+4.62S -0.87C	+4.75S -1.00C	+4.87S -1.12C
+4.00S	+4.12S -0.12C	+4.25S -0.25C	+4.37S -0.37C	+4.50S -0.50C	+4.62S -0.62C	+4.75S -0.75C	+4.87S -0.87C	+5.00S -1.00C	+5.12S -1.12C
+4.25S	+4.37S -0.12C	+4.50S -0.25C	+4.62S -0.37C	+4.75S -0.50C	+4.87S -0.62C	+5.00S -0.75C	+5.12S -0.87C	+5.25S -1.00C	+5.37S -1.12C

The letter S represents Sphere

The letter C represents Cylinder

Transposition Table No. 3.

(+C+)

Spheres From +0.12 to +1.62
Combined With
Cylinders From +1.25 to +2.25

	+1.25C	+1.37C	+1.50C	+1.62C	+1.75C	+1.87C	+2.00C	+2.12C	+2.25C
+0.12S	+1.37S -1.25C	+1.50S -1.37C	+1.62S -1.50C	+1.75S -1.62C	+1.87S -1.75C	+2.00S -1.87C	+2.12S -2.00C	+2.25S -2.12C	+2.37S -2.25C
+0.25S	+1.50S -1.25C	+1.62S -1.37C	+1.75S -1.50C	+1.87S -1.62C	+2.00S -1.75C	+2.12S -1.87C	+2.25S -2.00C	+2.37S -2.12C	+2.50S -2.25C
+0.37S	+1.62S -1.25C	+1.75S -1.37C	+1.87S -1.50C	+2.00S -1.62C	+2.12S -1.75C	+2.25S -1.87C	+2.37S -2.00C	+2.50S -2.12C	+2.62S -2.25C
+0.50S	+1.75S -1.25C	+1.87S -1.37C	+2.00S -1.50C	+2.12S -1.62C	+2.25S -1.75C	+2.37S -1.87C	+2.50S -2.00C	+2.62S -2.12C	+2.75S -2.25C
+0.62S	+1.87S -1.25C	+2.00S -1.37C	+2.12S -1.50C	+2.25S -1.62C	+2.37S -1.75C	+2.50S -1.87C	+2.62S -2.00C	+2.75S -2.12C	+2.87S -2.25C
+0.75S	+2.00S -1.25C	+2.12S -1.37C	+2.25S -1.50C	+2.37S -1.62C	+2.50S -1.75C	+2.62S -1.87C	+2.75S -2.00C	+2.87S -2.12C	+3.00S -2.25C
+0.87S	+2.12S -1.25C	+2.25S -1.37C	+2.37S -1.50C	+2.50S -1.62C	+2.62S -1.75C	+2.75S -1.87C	+2.87S -2.00C	+3.00S -2.12C	+3.12S -2.25C
+1.00S	+2.25S -1.25C	+2.37S -1.37C	+2.50S -1.50C	+2.62S -1.62C	+2.75S -1.75C	+2.87S -1.87C	+3.00S -2.00C	+3.12S -2.12C	+3.25S -2.25C
+1.12S	+2.37S -1.25C	+2.50S -1.37C	+2.62S -1.50C	+2.75S -1.62C	+2.87S -1.75C	+3.00S -1.87C	+3.12S -2.00C	+3.25S -2.12C	+3.37S -2.25C
+1.25S	+2.50S -1.25C	+2.62S -1.37C	+2.75S -1.50C	+2.87S -1.62C	+3.00S -1.75C	+3.12S -1.87C	+3.25S -2.00C	+3.37S -2.12C	+3.50S -2.25C
+1.37S	+2.62S -1.25C	+2.75S -1.37C	+2.87S -1.50C	+3.00S -1.62C	+3.12S -1.75C	+3.25S -1.87C	+3.37S -2.00C	+3.50S -2.12C	+3.62S -2.25C
+1.50S	+2.75S -1.25C	+2.87S -1.37C	+3.00S -1.50C	+3.12S -1.62C	+3.25S -1.75C	+3.37S -1.87C	+3.50S -2.00C	+3.62S -2.12C	+3.75S -2.25C
+1.62S	+2.87S -1.25C	+3.00S -1.37C	+3.12S -1.50C	+3.25S -1.62C	+3.37S -1.75C	+3.50S -1.87C	+3.62S -2.00C	+3.75S -2.12C	+3.87S -2.25C

The letter S represents Sphere

The letter C represents Cylinder

Transposition Table No. 4.

(+○+)

Spheres From +1.75 to +4.25
Combined With
Cylinders From +1.25 to +2.25

	+1.25C	+1.37C	+1.50C	+1.62C	+1.75C	+1.87C	+2.00C	+2.12C	+2.25C
+1.75S	+3.00S -1.25C	+3.12S -1.37C	+3.25S -1.50C	+3.37S -1.62C	+3.50S -1.75C	+3.62S -1.87C	+3.75S -2.00C	+3.87S -2.12C	+4.00S -2.25C
+1.87S	+3.12S -1.25C	+3.25S -1.37C	+3.37S -1.50C	+3.50S -1.62C	+3.62S -1.75C	+3.75S -1.87C	+3.87S -2.00C	+4.00S -2.12C	+4.12S -2.25C
+2.00S	+3.25S -1.25C	+3.37S -1.37C	+3.50S -1.50C	+3.62S -1.62C	+3.75S -1.75C	+3.87S -1.87C	+4.00S -2.00C	+4.12S -2.12C	+4.25S -2.25C
+2.12S	+3.37S -1.25C	+3.50S -1.37C	+3.62S -1.50C	+3.75S -1.62C	+3.87S -1.75C	+4.00S -1.87C	+4.12S -2.00C	+4.25S -2.12C	+4.37S -2.25C
+2.25S	+3.50S -1.25C	+3.62S -1.37C	+3.75S -1.50C	+3.87S -1.62C	+4.00S -1.75C	+4.12S -1.87C	+4.25S -2.00C	+4.37S -2.12C	+4.50S -2.25C
+2.50S	+3.75S -1.25C	+3.87S -1.37C	+4.00S -1.50C	+4.12S -1.62C	+4.25S -1.75C	+4.37S -1.87C	+4.50S -2.00C	+4.62S -2.12C	+4.75S -2.25C
+2.75S	+4.00S -1.25C	+4.12S -1.37C	+4.25S -1.50C	+4.37S -1.62C	+4.50S -1.75C	+4.62S -1.87C	+4.75S -2.00C	+4.87S -2.12C	+5.00S -2.25C
+3.00S	+4.25S -1.25C	+4.37S -1.37C	+4.50S -1.50C	+4.62S -1.62C	+4.75S -1.75C	+4.87S -1.87C	+5.00S -2.00C	+5.12S -2.12C	+5.25S -2.25C
+3.25S	+4.50S -1.25C	+4.62S -1.37C	+4.75S -1.50C	+4.87S -1.62C	+5.00S -1.75C	+5.12S -1.87C	+5.25S -2.00C	+5.37S -2.12C	+5.50S -2.25C
+3.50S	+4.75S -1.25C	+4.87S -1.37C	+5.00S -1.50C	+5.12S -1.62C	+5.25S -1.75C	+5.37S -1.87C	+5.50S -2.00C	+5.62S -2.12C	+5.75S -2.25C
+3.75S	+5.00S -1.25C	+5.12S -1.37C	+5.25S -1.50C	+5.37S -1.62C	+5.50S -1.75C	+5.62S -1.87C	+5.75S -2.00C	+5.87S -2.12C	+6.00S -2.25C
+4.00S	+5.25S -1.25C	+5.37S -1.37C	+5.50S -1.50C	+5.62S -1.62C	+5.75S -1.75C	+5.87S -1.87C	+6.00S -2.00C	+6.12S -2.12C	+6.25S -2.25C
+4.25S	+5.50S -1.25C	+5.62S -1.37C	+5.75S -1.50C	+5.87S -1.62C	+6.00S -1.75C	+6.12S -1.87C	+6.25S -2.00C	+6.37S -2.12C	+6.50S -2.25C

The letter S represents Sphere
The letter C represents Cylinder

Transposition Table No. 5.

(+○+)

Spheres From +0.12 to +1.62
 Combined With
 Cylinders From +2.50 to +4.25

	+2.50C	+2.75C	+3.00C	+3.25C	+3.50C	+3.75C	+4.00C	+4.25C
+0.12S	+2.62S -2.50C	+2.87S -2.75C	+3.12S -3.00C	+3.37S -3.25C	+3.62S -3.50C	+3.87S -3.75C	+4.12S -4.00C	+4.37S -4.25C
+0.25S	+2.75S -2.50C	+3.00S -2.75C	+3.25S -3.00C	+3.50S -3.25C	+3.75S -3.50C	+4.00S -3.75C	+4.25S -4.00C	+4.50S -4.25C
+0.37S	+2.87S -2.50C	+3.12S -2.75C	+3.37S -3.00C	+3.62S -3.25C	+3.87S -3.50C	+4.12S -3.75C	+4.37S -4.00C	+4.62S -4.25C
+0.50S	+3.00S -2.50C	+3.25S -2.75C	+3.50S -3.00C	+3.75S -3.25C	+4.00S -3.50C	+4.25S -3.75C	+4.50S -4.00C	+4.75S -4.25C
+0.62S	+3.12S -2.50C	+3.37S -2.75C	+3.62S -3.00C	+3.87S -3.25C	+4.12S -3.50C	+4.37S -3.75C	+4.62S -4.00C	+4.87S -4.25C
+0.75S	+3.25S -2.50C	+3.50S -2.75C	+3.75S -3.00C	+4.00S -3.25C	+4.25S -3.50C	+4.50S -3.75C	+4.75S -4.00C	+5.00S -4.25C
+0.87S	+3.37S -2.50C	+3.62S -2.75C	+3.87S -3.00C	+4.12S -3.25C	+4.37S -3.50C	+4.62S -3.75C	+4.87S -4.00C	+5.12S -4.25C
+1.00S	+3.50S -2.50C	+3.75S -2.75C	+4.00S -3.00C	+4.25S -3.25C	+4.50S -3.50C	+4.75S -3.75C	+5.00S -4.00C	+5.25S -4.25C
+1.12S	+3.62S -2.50C	+3.87S -2.75C	+4.12S -3.00C	+4.37S -3.25C	+4.62S -3.50C	+4.87S -3.75C	+5.12S -4.00C	+5.37S -4.25C
+1.25S	+3.75S -2.50C	+4.00S -2.75C	+4.25S -3.00C	+4.50S -3.25C	+4.75S -3.50C	+5.00S -3.75C	+5.25S -4.00C	+5.50S -4.25C
+1.37S	+3.87S -2.50C	+4.12S -2.75C	+4.37S -3.00C	+4.62S -3.25C	+4.87S -3.50C	+5.12S -3.75C	+5.37S -4.00C	+5.62S -4.25C
+1.50S	+4.00S -2.50C	+4.25S -2.75C	+4.50S -3.00C	+4.75S -3.25C	+5.00S -3.50C	+5.25S -3.75C	+5.50S -4.00C	+5.75S -4.25C
+1.62S	+4.12S -2.50C	+4.37S -2.75C	+4.62S -3.00C	+4.87S -3.25C	+5.12S -3.50C	+5.37S -3.75C	+5.62S -4.00C	+5.87S -4.25C

The letter S represents Sphere

The letter C represents Cylinder

Transposition Table No. 6.

(+ - +)

Spheres From +1.75 to +4.25
Combined With
Cylinders From +2.50 to +4.25

	+2.50C	+2.75C	+3.00C	+3.25C	+3.50C	+3.75C	+4.00C	+4.25C
+1.75S	+4.25S -2.50C	+4.50S -2.75C	+4.75S -3.00C	+5.00S -3.25C	+5.25S -3.50C	+5.50S -3.75C	+5.75S -4.00C	+6.00S -4.25C
+1.87S	+4.37S -2.50C	+4.62S -2.75C	+4.87S -3.00C	+5.12S -3.25C	+5.37S -3.50C	+5.62S -3.75C	+5.87S -4.00C	+6.12S -4.25C
+2.00S	+4.50S -2.50C	+4.75S -2.75C	+5.00S -3.00C	+5.25S -3.25C	+5.50S -3.50C	+5.75S -3.75C	+6.00S -4.00C	+6.25S -4.25C
+2.12S	+4.62S -2.50C	+4.87S -2.75C	+5.12S -3.00C	+5.37S -3.25C	+5.62S -3.50C	+5.87S -3.75C	+6.12S -4.00C	+6.37S -4.25C
+2.25S	+4.75S -2.50C	+5.00S -2.75C	+5.25S -3.00C	+5.50S -3.25C	+5.75S -3.50C	+6.00S -3.75C	+6.25S -4.00C	+6.50S -4.25C
+2.50S	+5.00S -2.50C	+5.25S -2.75C	+5.50S -3.00C	+5.75S -3.25C	+6.00S -3.50C	+6.25S -3.75C	+6.50S -4.00C	+6.75S -4.25C
+2.75S	+5.25S -2.50C	+5.50S -2.75C	+5.75S -3.00C	+6.00S -3.25C	+6.25S -3.50C	+6.50S -3.75C	+6.75S -4.00C	+7.00S -4.25C
+3.00S	+5.50S -2.50C	+5.75S -2.75C	+6.00S -3.00C	+6.25S -3.25C	+6.50S -3.50C	+6.75S -3.75C	+7.00S -4.00C	+7.25S -4.25C
+3.25S	+5.75S -2.50C	+6.00S -2.75C	+6.25S -3.00C	+6.50S -3.25C	+6.75S -3.50C	+7.00S -3.75C	+7.25S -4.00C	+7.50S -4.25C
+3.50S	+6.00S -2.50C	+6.25S -2.75C	+6.50S -3.00C	+6.75S -3.25C	+7.00S -3.50C	+7.25S -3.75C	+7.50S -4.00C	+7.75S -4.25C
+3.75S	+6.25S -2.50C	+6.50S -2.75C	+6.75S -3.00C	+7.00S -3.25C	+7.25S -3.50C	+7.50S -3.75C	+7.75S -4.00C	+8.00S -4.25C
+4.00S	+6.50S -2.50C	+6.75S -2.75C	+7.00S -3.00C	+7.25S -3.25C	+7.50S -3.50C	+7.75S -3.75C	+8.00S -4.00C	+8.25S -4.25C
+4.25S	+6.75S -2.50C	+7.00S -2.75C	+7.25S -3.00C	+7.50S -3.25C	+7.75S -3.50C	+8.00S -3.75C	+8.25S -4.00C	+8.50S -4.25C

The letter S represents Sphere
The letter C represents Cylinder

CHAPTER III.

TRANSPOSING PLUS ON MINUS.

(+ —)

Transposing plus on minus compound prescriptions is a little more confusing than it is to Transpose plus on plus compounds, yet it is not to be considered difficult. If we only do as suggested previously, and that is to follow the rules, all will be well.

In Transposing plus on minus prescriptions, it is very important before attempting to Transpose, to note which is the greater power, the sphere or the cylinder; as the plus on minus compound with the sphere being the greater power, is transposed differently than is a plus on minus compound with the cylindrical power greater.

When Transposing a plus on minus prescription, where the spherical power is greater than the power of the cylinder, you subtract the power of the cylinder from the power of the sphere, and the remainder is the proper sphere for your new or Transposed prescription.

After you have done this, combine with your new sphere, a cylinder of the same power as cylinder of your original prescription, but of opposite sign and opposite axis.

We will now try a few examples of plus on minus compound prescriptions, with the spherical power the greater, and Transpose them to compound prescriptions with plus cylinders.

Example No. 1

Original Prescription +3.00 Sph. — 1.00 Cyl. axis 65°

Subtract Cylinder —1.00 Add 90°

 Transposed is +2.00 Sph. + 1.00 Cyl. axis 155°

Example No. 2Original Prescription +1.25 Sph. $\ominus$ -1.00 Cyl. Axis 170°

Subtract Cylinder -1.00 Subtract 90°

Transposed is +0.25 Sph. $\ominus$ +1.00 Cyl. Axis 80°**Example No. 3**Original Prescription +4.00 Sph. $\ominus$ -0.75 Cyl. Axis 5°

Subtract Cylinder -0.75 Add 90°

Transposed is +3.25 Sph. $\ominus$ +0.75 Cyl. Axis 95°**Example No. 4**Original Prescription +2.00 Sph. $\ominus$ -0.50 Cyl. Axis 80°

Subtract Cylinder -0.50 Add 90°

Transposed is +1.50 Sph. $\ominus$ +0.50 Cyl. Axis 170°**Example No. 5**Original Prescription +1.75 Sph. $\ominus$ -1.25 Cyl. Axis 95°

Subtract Cylinder -1.25 Subtract 90°

Transposed is +0.50 Sph. $\ominus$ +1.25 Cyl. Axis 5°**Example No. 6**Original Prescription +4.25 Sph. $\ominus$ -2.00 Cyl. Axis 85°

Subtract Cylinder -2.00 Add 90°

Transposed is +2.25 Sph. $\ominus$ +2.00 Cyl. Axis 175°**ILLUSTRATION OF EXAMPLE NO. 6 (TORIC)**Original Prescription
+4.25 Sph. $\ominus$ -2.00 Cyl. Ax. 85Outside
Curve
+10.25Inside Curves
-6.00 Ax. 85
-8.00 Ax. 175Transposed Prescription
+2.25 Sph. $\ominus$ +2.00 Cyl. Ax. 175Outside Curves
+6.00 Ax. 175
+8.00 Ax. 85Inside
Curve
-3.75

Transposing plus on minus compound prescriptions, where the power of the cylinder is greater than the power of the sphere, it is transposed differently than plus on minus prescriptions, where the spherical power is greater.

Therefore in transposing plus on minus prescriptions, where the cylindrical power is greater than that of the sphere, you subtract the power of the sphere from the power of the cylinder; the remainder is the proper sphere for your new or transposed prescription. After this has been done, combine with this sphere, a cylinder of the same power as cylinder of your original prescription, but opposite sign, and opposite axis.

Now we will take a few examples of plus on minus compound prescriptions, where the power of the cylinder is greater than the power of the sphere, and transpose these into compound prescriptions with plus cylinders.

Example No. 1

Original Prescription	+2.00 Sph.	—3.50 Cyl.	Axis 60°
Subtract Sphere		+2.00	Add 90°
Transposed is	—1.50 Sph. ⊕ +3.50 Cyl. Axis 150°		

Example No. 2

Original Prescription	+1.25 Sph.	—2.25 Cyl.	Axis 90°
Subtract Sphere		+1.25	Add 90°
Transposed is	—1.00 Sph. ⊕ +2.25 Cyl. Axis 180°		

Example No. 3

Original Prescription	+0.25 Sph.	—0.75 Cyl.	Axis 35°
Subtract Sphere		+0.25	Add 90°
Transposed is	—0.50 Sph. ⊕ +0.75 Cyl. Axis 125°		

Example No. 4

Original Prescription	+3.00 Sph.	—4.00 Cyl.	Axis 10°
Subtract Sphere		+3.00	Add 90°
Transposed is	—1.00 Sph. ⊕ +4.00 Cyl. Axis 100°		

Example No. 5Original Prescription +1.00 Sph. $\ominus$ -2.00 Cyl. Axis 45°Subtract Sphere +1.00 Add 90°Transposed is -1.00 Sph. $\ominus$ +2.00 Cyl. Axis 135°**Example No. 6**Original Prescription +1.75 Sph. $\ominus$ -3.50 Cyl. Axis 95°Subtract Sphere +1.75 Subtract 90°Transposed is -1.75 Sph. $\ominus$ +3.50 Cyl. Axis 5°**ILLUSTRATION OF EXAMPLE NO. 6 (TORIC)**

Original Prescription

+1.75 Sph. $\ominus$ -3.50 Cyl. Ax. 95

Inside Curves
-9.50 Ax. 5
-6.00 Ax. 95



Outside
Curve
+7.75

Transposed Prescription

-1.75 Sph. $\ominus$ +3.50 Cyl. Ax. 5

Outside Curves
+6.00 Ax. 5
+9.50 Ax. 95



Inside
Curve
-7.75

Transposition Table No. 1.

(+ —)

Spheres From +0.12 to +1.62
Combined With
Cylinders From -0.12 to -1.12

	-0.12C	-0.25C	-0.37C	-0.50C	-0.62C	-0.75C	-0.87C	-1.00C	-1.12C
+0.12S	Pl. Cyl. +0.12C	-0.12S +0.25C	-0.25S +0.37C	-0.37S +0.50C	-0.50S +0.62C	-0.62S +0.75C	-0.75S +0.87C	-0.87S +1.00C	-1.00S +1.12C
+0.25S	+0.12S +0.12C	Pl. Cyl. +0.25C	-0.12S +0.37C	-0.25S +0.50C	-0.37S +0.62C	-0.50S +0.75C	-0.62S +0.87C	-0.75S +1.00C	-0.87S +1.12C
+0.37S	+0.25S +0.12C	+0.12S +0.25C	Pl. Cyl. +0.37C	-0.12S +0.50C	-0.25S +0.62C	-0.37S +0.75C	-0.50S +0.87C	-0.62S +1.00C	-0.75S +1.12C
+0.50S	+0.37S +0.12C	+0.25S +0.25C	+0.12S +0.37C	Pl. Cyl. +0.50C	-0.12S +0.62C	-0.25S +0.75C	-0.37S +0.87C	-0.50S +1.00C	-0.62S +1.12C
+0.62S	+0.50S +0.12C	+0.37S +0.25C	+0.25S +0.37C	+0.12S +0.50C	Pl. Cyl. +0.62C	-0.12S +0.75C	-0.25S +0.87C	-0.37S +1.00C	-0.50S +1.12C
+0.75S	+0.62S +0.12C	+0.50S +0.25C	+0.37S +0.37C	+0.25S +0.50C	+0.12S +0.62C	Pl. Cyl. +0.75C	-0.12S +0.87C	-0.25S +1.00C	-0.37S +1.12C
+0.87S	+0.75S +0.12C	+0.62S +0.25C	+0.50S +0.37C	+0.37S +0.50C	+0.25S +0.62C	+0.12S +0.75C	Pl. Cyl. +0.87C	-0.12S +1.00C	-0.25S +1.12C
+1.00S	+0.87S +0.12C	+0.75S +0.25C	+0.62S +0.37C	+0.50S +0.50C	+0.37S +0.62C	+0.25S +0.75C	+0.12S +0.87C	Pl. Cyl. +1.00C	-0.12S +1.12C
+1.12S	+1.00S +0.12C	+0.87S +0.25C	+0.75S +0.37C	+0.62S +0.50C	+0.50S +0.62C	+0.37S +0.75C	+0.25S +0.87C	+0.12S +1.00C	Pl. Cyl. +1.12C
+1.25S	+1.12S +0.12C	+1.00S +0.25C	+0.87S +0.37C	+0.75S +0.50C	+0.62S +0.62C	+0.50S +0.75C	+0.37S +0.87C	+0.25S +1.00C	+0.12S +1.12C
+1.37S	+1.25S +0.12C	+1.12S +0.25C	+1.00S +0.37C	+0.87S +0.50C	+0.75S +0.62C	+0.62S +0.75C	+0.50S +0.87C	+0.37S +1.00C	+0.25S +1.12C
+1.50S	+1.37S +0.12C	+1.25S +0.25C	+1.12S +0.37C	+1.00S +0.50C	+0.87S +0.62C	+0.75S +0.75C	+0.62S +0.87C	+0.50S +1.00C	+0.37S +1.12C
+1.62S	+1.50S +0.12C	+1.37S +0.25C	+1.25S +0.37C	+1.12S +0.50C	+1.00S +0.62C	+0.87S +0.75C	+0.75S +0.87C	+0.62S +1.00C	+0.50S +1.12C

The letter S represents Sphere
The letter C represents Cylinder

Transposition Table No. 2.

(+ — —)

Spheres From +1.75 to +4.25
 Combined With
 Cylinders From —0.12 to —1.12

	—0.12C	—0.25C	—0.37C	—0.50C	—0.62C	—0.75C	—0.87C	—1.00C	—1.12C
+1.75S	+1.62S +0.12C	+1.50S +0.25C	+1.37S +0.37C	+1.25S +0.50C	+1.12S +0.62C	+1.00S +0.75C	+0.87S +0.87C	+0.75S +1.00C	+0.62S +1.12C
+1.87S	+1.75S +0.12C	+1.62S +0.25C	+1.50S +0.37C	+1.37S +0.50C	+1.25S +0.62C	+1.12S +0.75C	+1.00S +0.87C	+0.87S +1.00C	+0.75S +1.12C
+2.00S	+1.87S +0.12C	+1.75S +0.25C	+1.62S +0.37C	+1.50S +0.50C	+1.37S +0.62C	+1.25S +0.75C	+1.12S +0.87C	+1.00S +1.00C	+0.87S +1.12C
+2.12S	+2.00S +0.12C	+1.87S +0.25C	+1.75S +0.37C	+1.62S +0.50C	+1.50S +0.62C	+1.37S +0.75C	+1.25S +0.87C	+1.12S +1.00C	+1.00S +1.12C
+2.25S	+2.12S +0.12C	+2.00S +0.25C	+1.87S +0.37C	+1.75S +0.50C	+1.62S +0.62C	+1.50S +0.75C	+1.37S +0.87C	+1.25S +1.00C	+1.12S +1.12C
+2.50S	+2.37S +0.12C	+2.25S +0.25C	+2.12S +0.37C	+2.00S +0.50C	+1.87S +0.62C	+1.75S +0.75C	+1.62S +0.87C	+1.50S +1.00C	+1.37S +1.12C
+2.75S	+2.62S +0.12C	+2.50S +0.25C	+2.37S +0.37C	+2.25S +0.50C	+2.12S +0.62C	+2.00S +0.75C	+1.87S +0.87C	+1.75S +1.00C	+1.62S +1.12C
+3.00S	+2.87S +0.12C	+2.75S +0.25C	+2.62S +0.37C	+2.50S +0.50C	+2.37S +0.62C	+2.25S +0.75C	+2.12S +0.87C	+2.00S +1.00C	+1.87S +1.12C
+3.25S	+3.12S +0.12C	+3.00S +0.25C	+2.87S +0.37C	+2.75S +0.50C	+2.62S +0.62C	+2.50S +0.75C	+2.37S +0.87C	+2.25S +1.00C	+2.12S +1.12C
+3.50S	+3.37S +0.12C	+3.25S +0.25C	+3.12S +0.37C	+3.00S +0.50C	+2.87S +0.62C	+2.75S +0.75C	+2.62S +0.87C	+2.50S +1.00C	+2.37S +1.12C
+3.75S	+3.62S +0.12C	+3.50S +0.25C	+3.37S +0.37C	+3.25S +0.50C	+3.12S +0.62C	+3.00S +0.75C	+2.87S +0.87C	+2.75S +1.00C	+2.62S +1.12C
+4.00S	+3.87S +0.12C	+3.75S +0.25C	+3.62S +0.37C	+3.50S +0.50C	+3.37S +0.62C	+3.25S +0.75C	+3.12S +0.87C	+3.00S +1.00C	+2.87S +1.12C
+4.25S	+4.12S +0.12C	+4.00S +0.25C	+3.87S +0.37C	+3.75S +0.50C	+3.62S +0.62C	+3.50S +0.75C	+3.37S +0.87C	+3.25S +1.00C	+3.12S +1.12C

The letter S represents Sphere

The letter C represents Cylinder

Transposition Table No. 3.

(+ —)

Spheres From +0.12 to +1.62
Combined With
Cylinders From -1.25 to -2.25

	-1.25C	-1.37C	-1.50C	-1.62C	-1.75C	-1.87C	-2.00C	-2.12C	-2.25C
+0.12S	-1.12S +1.25C	-1.25S +1.37C	-1.37S +1.50C	-1.50S +1.62C	-1.62S +1.75C	-1.75S +1.87C	-1.87S +2.00C	-2.00S +2.12C	-2.12S +2.25C
+0.25S	-1.00S +1.25C	-1.12S +1.37C	-1.25S +1.50C	-1.37S +1.62C	-1.50S +1.75C	-1.62S +1.87C	-1.75S +2.00C	-1.87S +2.12C	-2.00S +2.25C
+0.37S	-0.87S +1.25C	-1.00S +1.37C	-1.12S +1.50C	-1.25S +1.62C	-1.37S +1.75C	-1.50S +1.87C	-1.62S +2.00C	-1.75S +2.12C	-1.87S +2.25C
+0.50S	-0.75S +1.25C	-0.87S +1.37C	-1.00S +1.50C	-1.12S +1.62C	-1.25S +1.75C	-1.37S +1.87C	-1.50S +2.00C	-1.62S +2.12C	-1.75S +2.25C
+0.62S	-0.62S +1.25C	-0.75S +1.37C	-0.87S +1.50C	-1.00S +1.62C	-1.12S +1.75C	-1.25S +1.87C	-1.37S +2.00C	-1.50S +2.12C	-1.62S +2.25C
+0.75S	-0.50S +1.25C	-0.62S +1.37C	-0.75S +1.50C	-0.87S +1.62C	-1.00S +1.75C	-1.12S +1.87C	-1.25S +2.00C	-1.37S +2.12C	-1.50S +2.25C
+0.87S	-0.37S +1.25C	-0.50S +1.37C	-0.62S +1.50C	-0.75S +1.62C	-0.87S +1.75C	-1.00S +1.87C	-1.12S +2.00C	-1.25S +2.12C	-1.37S +2.25C
+1.00S	-0.25S +1.25C	-0.37S +1.37C	-0.50S +1.50C	-0.62S +1.62C	-0.75S +1.75C	-0.87S +1.87C	-1.00S +2.00C	-1.12S +2.12C	-1.25S +2.25C
+1.12S	-0.12S +1.25C	-0.25S +1.37C	-0.37S +1.50C	-0.50S +1.62C	-0.62S +1.75C	-0.75S +1.87C	-0.87S +2.00C	-1.00S +2.12C	-1.12S +2.25C
+1.25S	Pl. Cyl. +1.25C	-0.12S +1.37C	-0.25S +1.50C	-0.37S +1.62C	-0.50S +1.75C	-0.62S +1.87C	-0.75S +2.00C	-0.87S +2.12C	-1.00S +2.25C
+1.37S	+0.12S +1.25C	Pl. Cyl. +1.37C	-0.12S +1.50C	-0.25S +1.62C	-0.37S +1.75C	-0.50S +1.87C	-0.62S +2.00C	-0.75S +2.12C	-0.87S +2.25C
+1.50S	+0.25S +1.25C	+0.12S +1.37C	Pl. Cyl. +1.50C	-0.12S +1.62C	-0.25S +1.75C	-0.37S +1.87C	-0.50S +2.00C	-0.62S +2.12C	-0.75S +2.25C
+1.62S	+0.37S +1.25C	+0.25S +1.37C	+0.12S +1.50C	Pl. Cyl. +1.62C	-0.12S +1.75C	-0.25S +1.87C	-0.37S +2.00C	-0.50S +2.12C	-0.62S +2.25C

The letter S represents Sphere
The letter C represents Cylinder

Transposition Table No. 4.

(+ —)

Spheres From +1.75 to +4.25
 Combined With
 Cylinders From -1.25 to -2.25

	-1.25C	-1.37C	-1.50C	-1.62C	-1.75C	-1.87C	-2.00C	-2.12C	-2.25C
+1.75S	+0.50S +1.25C	+0.37S +1.37C	+0.25S +1.50C	+0.12S +1.62C	Pl. Cyl. +1.75C	-0.12S +1.87C	-0.25S +2.00C	-0.37S +2.12C	-0.50S +2.25C
+1.87S	+0.62S +1.25C	+0.50S +1.37C	+0.37S +1.50C	+0.25S +1.62C	+0.12S +1.75C	Pl. Cyl. +1.87C	-0.12S +2.00C	-0.25S +2.12C	-0.37S +2.25C
+2.00S	+0.75S +1.25C	+0.62S +1.37C	+0.50S +1.50C	+0.37S +1.62C	+0.25S +1.75C	+0.12S +1.87C	Pl. Cyl. +2.00C	-0.12S +2.12C	-0.25S +2.25C
+2.12S	+0.87S +1.25C	+0.75S +1.37C	+0.62S +1.50C	+0.50S +1.62C	+0.37S +1.75C	+0.25S +1.87C	+0.12S +2.00C	Pl. Cyl. +2.12C	-0.12S +2.25C
+2.25S	+1.00S +1.25C	+0.87S +1.37C	+0.75S +1.50C	+0.62S +1.62C	+0.50S +1.75C	+0.37S +1.87C	+0.25S +2.00C	+0.12S +2.12C	Pl. Cyl. +2.25C
+2.50S	+1.25S +1.25C	+1.12S +1.37C	+1.00S +1.50C	+0.87S +1.62C	+0.75S +1.75C	+0.62S +1.87C	+0.50S +2.00C	+0.37S +2.12C	+0.25S +2.25C
+2.75S	+1.50S +1.25C	+1.37S +1.37C	+1.25S +1.50C	+1.12S +1.62C	+1.00S +1.75C	+0.87S +1.87C	+0.75S +2.00C	+0.62S +2.12C	+0.50S +2.25C
+3.00S	+1.75S +1.25C	+1.62S +1.37C	+1.50S +1.50C	+1.37S +1.62C	+1.25S +1.75C	+1.12S +1.87C	+1.00S +2.00C	+0.87S +2.12C	+0.75S +2.25C
+3.25S	+2.00S +1.25C	+1.87S +1.37C	+1.75S +1.50C	+1.62S +1.62C	+1.50S +1.75C	+1.37S +1.87C	+1.25S +2.00C	+1.12S +2.12C	+1.00S +2.25C
+3.50S	+2.25S +1.25C	+2.12S +1.37C	+2.00S +1.50C	+1.87S +1.62C	+1.75S +1.75C	+1.62S +1.87C	+1.50S +2.00C	+1.37S +2.12C	+1.25S +2.25C
+3.75S	+2.50S +1.25C	+2.37S +1.37C	+2.25S +1.50C	+2.12S +1.62C	+2.00S +1.75C	+1.87S +1.87C	+1.75S +2.00C	+1.62S +2.12C	+1.50S +2.25C
+4.00S	+2.75S +1.25C	+2.62S +1.37C	+2.50S +1.50C	+2.37S +1.62C	+2.25S +1.75C	+2.12S +1.87C	+2.00S +2.00C	+1.87S +2.12C	+1.75S +2.25C
+4.25S	+3.00S +1.25C	+2.87S +1.37C	+2.75S +1.50C	+2.62S +1.62C	+2.50S +1.75C	+2.37S +1.87C	+2.25S +2.00C	+2.12S +2.12C	+2.00S +2.25C

The letter S represents Sphere

The letter C represents Cylinder

Transposition Table No. 5.

(+—)

Spheres From +0.12 to +1.62
Combined With
Cylinders From —2.50 to —4.25

	—2.50C	—2.75C	—3.00C	—3.25C	—3.50C	—3.75C	—4.00C	—4.25C
+0.12S	—2.37S +2.50C	—2.62S +2.75C	—2.87S +3.00C	—3.12S +3.25C	—3.37S +3.50C	—3.62S +3.75C	—3.87S +4.00C	—4.12S +4.25C
+0.25S	—2.25S +2.50C	—2.50S +2.75C	—2.75S +3.00C	—3.00S +3.25C	—3.25S +3.50C	—3.50S +3.75C	—3.75S +4.00C	—4.00S +4.25C
+0.37S	—2.12S +2.50C	—2.37S +2.75C	—2.62S +3.00C	—2.87S +3.25C	—3.12S +3.50C	—3.37S +3.75C	—3.62S +4.00C	—3.87S +4.25C
+0.50S	—2.00S +2.50C	—2.25S +2.75C	—2.50S +3.00C	—2.75S +3.25C	—3.00S +3.50C	—3.25S +3.75C	—3.50S +4.00C	—3.75S +4.25C
+0.62S	—1.87S +2.50C	—2.12S +2.75C	—2.37S +3.00C	—2.62S +3.25C	—2.87S +3.50C	—3.12S +3.75C	—3.37S +4.00C	—3.62S +4.25C
+0.75S	—1.75S +2.50C	—2.00S +2.75C	—2.25S +3.00C	—2.50S +3.25C	—2.75S +3.50C	—3.00S +3.75C	—3.25S +4.00C	—3.50S +4.25C
+0.87S	—1.62S +2.50C	—1.87S +2.75C	—2.12S +3.00C	—2.37S +3.25C	—2.62S +3.50C	—2.87S +3.75C	—3.12S +4.00C	—3.37S +4.25C
+1.00S	—1.50S +2.50C	—1.75S +2.75C	—2.00S +3.00C	—2.25S +3.25C	—2.50S +3.50C	—2.75S +3.75C	—3.00S +4.00C	—3.25S +4.25C
+1.12S	—1.37S +2.50C	—1.62S +2.75C	—1.87S +3.00C	—2.12S +3.25C	—2.37S +3.50C	—2.62S +3.75C	—2.87S +4.00C	—3.12S +4.25C
+1.25S	—1.25S +2.50C	—1.50S +2.75C	—1.75S +3.00C	—2.00S +3.25C	—2.25S +3.50C	—2.50S +3.75C	—2.75S +4.00C	—3.00S +4.25C
+1.37S	—1.12S +2.50C	—1.37S +2.75C	—1.62S +3.00C	—1.87S +3.25C	—2.12S +3.50C	—2.37S +3.75C	—2.62S +4.00C	—2.87S +4.25C
+1.50S	—1.00S +2.50C	—1.25S +2.75C	—1.50S +3.00C	—1.75S +3.25C	—2.00S +3.50C	—2.25S +3.75C	—2.50S +4.00C	—2.75S +4.25C
+1.62S	—0.87S +2.50C	—1.12S +2.75C	—1.37S +3.00C	—1.62S +3.25C	—1.87S +3.50C	—2.12S +3.75C	—2.37S +4.00C	—2.62S +4.25C

The letter S represents Sphere
The letter C represents Cylinder

Transposition Table No. 6.

(+ — —)

Spheres From +1.75 to +4.25
 Combined With
 Cylinders From —2.50 to —4.25

	—2.50C	—2.75C	—3.00C	—3.25C	—3.50C	—3.75C	—4.00C	—4.25C
+1.75S	—0.75S +2.50C	—1.00S +2.75C	—1.25S +3.00C	—1.50S +3.25C	—1.75S +3.50C	—2.00S +3.75C	—2.25S +4.00C	—2.50S +4.25C
+1.87S	—0.62S +2.50C	—0.87S +2.75C	—1.12S +3.00C	—1.37S +3.25C	—1.62S +3.50C	—1.87S +3.75C	—2.12S +4.00C	—2.37S +4.25C
+2.00S	—0.50S +2.50C	—0.75S +2.75C	—1.00S +3.00C	—1.25S +3.25C	—1.50S +3.50C	—1.75S +3.75C	—2.00S +4.00C	—2.25S +4.25C
+2.12S	—0.37S +2.50C	—0.62S +2.75C	—0.87S +3.00C	—1.12S +3.25C	—1.37S +3.50C	—1.62S +3.75C	—1.87S +4.00C	—2.12S +4.25C
+2.25S	—0.25S +2.50C	—0.50S +2.75C	—0.75S +3.00C	—1.00S +3.25C	—1.25S +3.50C	—1.50S +3.75C	—1.75S +4.00C	—2.00S +4.25C
+2.50S	Pl. Cyl. +2.50C	—0.25S +2.75C	—0.50S +3.00C	—0.75S +3.25C	—1.00S +3.50C	—1.25S +3.75C	—1.50S +4.00C	—1.75S +4.25C
+2.75S	+0.25S +2.50C	Pl. Cyl. +2.75C	—0.25S +3.00C	—0.50S +3.25C	—0.75S +3.50C	—1.00S +3.75C	—1.25S +4.00C	—1.50S +4.25C
+3.00S	+0.50S +2.50C	+0.25S +2.75C	Pl. Cyl. +3.00C	—0.25S +3.25C	—0.50S +3.50C	—0.75S +3.75C	—1.00S +4.00C	—1.25S +4.25C
+3.25S	+0.75S +2.50C	+0.50S +2.75C	+0.25S +3.00C	Pl. Cyl. +3.25C	—0.25S +3.50C	—0.50S +3.75C	—0.75S +4.00C	—1.00S +4.25C
+3.50S	+1.00S +2.50C	+0.75S +2.75C	+0.50S +3.00C	+0.25S +3.25C	Pl. Cyl. +3.50C	—0.25S +3.75C	—0.50S +4.00C	—0.75S +4.25C
+3.75S	+1.25S +2.50C	+1.00S +2.75C	+0.75S +3.00C	+0.50S +3.25C	+0.25S +3.50C	Pl. Cyl. +3.75C	—0.25S +4.00C	—0.50S +4.25C
+4.00S	+1.50S +2.50C	+1.25S +2.75C	+1.00S +3.00C	+0.75S +3.25C	+0.50S +3.50C	+0.25S +3.75C	Pl. Cyl. +4.00C	—0.25S +4.25C
+4.25S	+1.75S +2.50C	+1.50S +2.75C	+1.25S +3.00C	+1.00S +3.25C	+0.75S +3.50C	+0.50S +3.75C	+0.25S +4.00C	Pl. Cyl. +4.25C

The letter S represents Sphere
 The letter C represents Cylinder

CHAPTER IV.

TRANSPOSING MINUS ON PLUS

 $(- \ominus +)$

With minus on plus compound prescriptions, in Transposing it is similar to plus on minus compound prescriptions, in that, you have to note which is the stronger power, the power of the sphere or the power of the cylinder.

Transposing minus on plus compound prescriptions, where the power of the sphere is greater than the power of the cylinder, subtract the power of the cylinder from the power of the sphere, the remainder is proper sphere of new or Transposed prescription. After this has been done, combine with this sphere, a cylinder with the same power as the cylinder of your original prescription, but of opposite sign and opposite axis.

At this point it would be well for us to try a few examples on minus on plus compound prescriptions, where the spherical power is greater than the power of the cylinder, and Transpose them into compounds with minus cylinders.

Example No. 1

Original Prescription	-2.25 Sph. $\ominus +1.25$ Cyl. Axis 10°
Subtract Cylinder	$+1.25$ Add 90°

Transposed Is	-1.00 Sph. $\ominus -1.25$ Cyl. Axis 100°
---------------	--

Example No. 2

Original Prescription	-3.50 Sph. $\ominus +2.50$ Cyl. Axis 30°
Subtract Cylinder	$+2.50$ Add 90°

Transposed is	-1.00 Sph. $\ominus -2.50$ Cyl. Axis 120°
---------------	--

Example No. 3Original Prescription —1.25 Sph. $\ominus$ +0.75 Cyl. Axis 145°

Subtract Cylinder +0.75 Subtract 90°

Transposed is —0.50 Sph. $\ominus$ —0.75 Cyl. Axis 55°**Example No. 4**Original Prescription —2.00 Sph. $\ominus$ +1.00 Cyl. Axis 5°

Subtract Cylinder +1.00 Add 90°

Transposed is —1.00 Sph. $\ominus$ —1.00 Cyl. Axis 95°**Example No. 5**Original Prescription —4.00 Sph. $\ominus$ +2.75 Cyl. Axis 170°

Subtract Cylinder +2.75 Subtract 90°

Transposed is —1.25 Sph. $\ominus$ —2.75 Cyl. Axis 80°**Example No. 6**Original Prescription —4.75 Sph. $\ominus$ +3.25 Cyl. Axis 105°

Subtract Cylinder +3.25 Subtract 90°

Transposed is —1.50 Sph. $\ominus$ —3.25 Cyl. Axis 15°**ILLUSTRATION OF EXAMPLE NO. 6 (TORIC)****Original Prescription**—4.75 Sph. $\ominus$ +3.25 Cyl. Ax. 105

Outside Curves

+6.00 Ax. 105

+9.25 Ax. 15

Inside

Curve

—10.75

**Transposed Prescription**—1.50 Sph. $\ominus$ —3.25 Cyl. Ax. 15

Outside

Curve

+4.50

Inside Curves

—6.00 Ax. 15

—9.25 Ax. 105



Now we will take up the Transposition of minus on plus compound prescriptions, where the power of the cylinder is greater than the power of the sphere.

In Transposing such prescriptions, you subtract the power of the sphere from the power of the cylinder, the remainder is the sphere for your new or Transposed prescription. Now that you have done this, combine with this sphere, a cylinder of the same power as the cylinder of your original prescription, but of opposite sign and opposite axis.

Let us take a few examples of minus on plus compound prescriptions, where the power of the cylinder is greater than the power of the sphere, and Transpose them into compound prescriptions with minus cylinders.

Example No. 1

Original Prescription	—1.00 Sph. ◯ +2.00 Cyl. Axis	25°
Subtract Sphere	—1.00	Add 90°
Transposed is	+1.00 Sph. ◯ —2.00 Cyl. Axis	115°

Example No. 2

Original Prescription	—1.50 Sph. ◯ +1.75 Cyl. Axis	65°
Subtract Sphere	—1.50	Add 90°
Transposed is	+0.25 Sph. ◯ —1.75 Cyl. Axis	155°

Example No. 3

Original Prescription	—0.50 Sph. ◯ +1.75 Cyl. Axis	180°
Subtract Sphere	—0.50 Subtract	90°
Transposed is	+1.25 Sph. ◯ —1.75 Cyl. Axis	90°

Example No. 4

Original Prescription	—2.00 Sph. ◯ +2.25 Cyl. Axis	175°
Subtract Sphere	—2.00 Subtract	90°
Transposed is	+0.25 Sph. ◯ —2.25 Cyl. Axis	85°

Example No. 5

Original Prescription -0.25 Sph. $\ominus$ $+1.50$ Cyl. Axis 35°
 Subtract Sphere -0.25 Add 90°

Transposed is $+1.25$ Sph. $\ominus$ -1.50 Cyl. Axis 125°

Example No. 6

Original Prescription -3.00 Sph. $\ominus$ $+4.25$ Cyl. Axis 165°
 Subtract Sphere -3.00 Subtract 90°

Transposed is $+1.25$ Sph. $\ominus$ -4.25 Cyl. Axis 75°

ILLUSTRATION OF EXAMPLE NO. 6 (TORIC)**Original Prescription**

-3.00 Sph. $\ominus$ $+4.25$ Cyl. Ax. 165°

Outside Curves
 $+6.00$ Ax. 165
 $+10.25$ Ax. 75

Inside
 Curve
 -9.00

**Transposed Prescription**

$+1.25$ Sph. $\ominus$ -4.25 Cyl. Ax. 75°

Outside
 Curve
 $+7.25$

Inside Curves
 -6.00 Ax. 75
 -10.25 Ax. 165



Transposition Table No. 1.

 $(-\bigcirc+)$

Spheres From -0.12 to -1.62
 Combined With
 Cylinders From $+0.12$ to $+1.12$

	+0.12C	+0.25C	+0.37C	+0.50C	+0.62C	+0.75C	+0.87C	+1.00C	+1.12C
-0.12S	Pl. Cyl. -0.12C	+0.12S -0.25C	+0.25S -0.37C	+0.37S -0.50C	+0.50S -0.62C	+0.62S -0.75C	+0.75S -0.87C	+0.87S -1.00C	+1.00S -1.12C
-0.25S	-0.12S -0.12C	Pl. Cyl. -0.25C	+0.12S -0.37C	+0.25S -0.50C	+0.37S -0.62C	+0.50S -0.75C	+0.62S -0.87C	+0.75S -1.00C	+0.87S -1.12C
-0.37S	-0.25S -0.12C	-0.12S -0.25C	Pl. Cyl. -0.37C	+0.12S -0.50C	+0.25S -0.62C	+0.37S -0.75C	+0.50S -0.87C	+0.62S -1.00C	+0.75S -1.12C
-0.50S	-0.37S -0.12C	-0.25S -0.25C	-0.12S -0.37C	Pl. Cyl. -0.50C	+0.12S -0.62C	+0.25S -0.75C	+0.37S -0.87C	+0.50S -1.00C	+0.62S -1.12C
-0.62S	-0.50S -0.12C	-0.37S -0.25C	-0.25S -0.37C	-0.12S -0.50C	Pl. Cyl. -0.62C	+0.12S -0.75C	+0.25S -0.87C	+0.37S -1.00C	+0.50S -1.12C
-0.75S	-0.62S -0.12C	-0.50S -0.25C	-0.37S -0.37C	-0.25S -0.50C	-0.12S -0.62C	Pl. Cyl. -0.75C	+0.12S -0.87C	+0.25S -1.00C	+0.37S -1.12C
-0.87S	-0.75S -0.12C	-0.62S -0.25C	-0.50S -0.37C	-0.37S -0.50C	-0.25S -0.62C	-0.12S -0.75C	Pl. Cyl. -0.87C	+0.12S -1.00C	+0.25S -1.12C
-1.00S	-0.87S -0.12C	-0.75S -0.25C	-0.62S -0.37C	-0.50S -0.50C	-0.37S -0.62C	-0.25S -0.75C	-0.12S -0.87C	Pl. Cyl. -1.00C	+0.12S -1.12C
-1.12S	-1.00S -0.12C	-0.87S -0.25C	-0.75S -0.37C	-0.62S -0.50C	-0.50S -0.62C	-0.37S -0.75C	-0.25S -0.87C	-0.12S -1.00C	Pl. Cyl. -1.12C
-1.25S	-1.12S -0.12C	-1.00S -0.25C	-0.87S -0.37C	-0.75S -0.50C	-0.62S -0.62C	-0.50S -0.75C	-0.37S -0.87C	-0.25S -1.00C	-0.12S -1.12C
-1.37S	-1.25S -0.12C	-1.12S -0.25C	-1.00S -0.37C	-0.87S -0.50C	-0.75S -0.62C	-0.62S -0.75C	-0.50S -0.87C	-0.37S -1.00C	-0.25S -1.12C
-1.50S	-1.37S -0.12C	-1.25S -0.25C	-1.12S -0.37C	-1.00S -0.50C	-0.87S -0.62C	-0.75S -0.75C	-0.62S -0.87C	-0.50S -1.00C	-0.37S -1.12C
-1.62S	-1.50S -0.12C	-1.37S -0.25C	-1.25S -0.37C	-1.12S -0.50C	-1.00S -0.62C	-0.87S -0.75C	-0.75S -0.87C	-0.62S -1.00C	-0.50S -1.12C

The letter S represents Sphere
 The letter C represents Cylinder

Transposition Table No. 2.

 $(- \bigcirc +)$ Spheres From -1.75 to -4.25

Combined With

Cylinders From $+0.12$ to $+1.12$

	+0.12C	+0.25C	+0.37C	+0.50C	+0.62C	+0.75C	+0.87C	+1.00C	+1.12C
-1.75S	-1.62S	-1.50S	-1.37S	-1.25S	-1.12S	-1.00S	-0.87S	-0.75S	-0.62S
	-0.12C	-0.25C	-0.37C	-0.50C	-0.62C	-0.75C	-0.87C	-1.00C	-1.12C
-1.87S	-1.75S	-1.62S	-1.50S	-1.37S	-1.25S	-1.12S	-1.00S	-0.87S	-0.75S
	-0.12C	-0.25C	-0.37C	-0.50C	-0.62C	-0.75C	-0.87C	-1.00C	-1.12C
-2.00S	-1.87S	-1.75S	-1.62S	-1.50S	-1.37S	-1.25S	-1.12S	-1.00S	-1.00S
	-0.12C	-0.25C	-0.37C	-0.50C	-0.62C	-0.75C	-0.87C	-1.00C	-1.12C
-2.12S	-2.00S	-1.87S	-1.75S	-1.62S	-1.50S	-1.37S	-1.25S	-1.12S	-1.12C
	-0.12C	-0.25C	-0.37C	-0.50C	-0.62C	-0.75C	-0.87C	-1.00C	-1.12S
-2.25S	-2.12S	-2.00S	-1.87S	-1.75S	-1.62S	-1.50S	-1.37S	-1.25S	-0.87S
	-0.12C	-0.25C	-0.37C	-0.50C	-0.62C	-0.75C	-0.87C	-1.00C	-1.12C
-2.50S	-2.37S	-2.25S	-2.12S	-2.00S	-1.87S	-1.75S	-1.62S	-1.50S	-1.37S
	-0.12C	-0.25C	-0.37C	-0.50C	-0.62C	-0.75C	-0.87C	-1.00C	-1.12C
-2.75S	-2.62S	-2.50S	-2.37S	-2.25S	-2.12S	-2.00S	-1.87S	-1.75S	-1.62S
	-0.12C	-0.25C	-0.37C	-0.50C	-0.62C	-0.75C	-0.87C	-1.00C	-1.12C
-3.00S	-2.87S	-2.75S	-2.62S	-2.50S	-2.37S	-2.25S	-2.12S	-2.00S	-1.87S
	-0.12C	-0.25C	-0.37C	-0.50C	-0.62C	-0.75C	-0.87C	-1.00C	-1.12C
-3.25S	-3.12S	-3.00S	-2.87S	-2.75S	-2.62S	-2.50S	-2.37S	-2.25S	-2.12S
	-0.12C	-0.25C	-0.37C	-0.50C	-0.62C	-0.75C	-0.87C	-1.00C	-1.12C
-3.50S	-3.37S	-3.25S	-3.12S	-3.00S	-2.87S	-2.75S	-2.62S	-2.50S	-2.37S
	-0.12C	-0.25C	-0.37C	-0.50C	-0.62C	-0.75C	-0.87C	-1.00C	-1.12C
-3.75S	-3.62S	-3.50S	-3.37S	-3.25S	-3.12S	-3.00S	-2.87S	-2.75S	-2.62S
	-0.12C	-0.25C	-0.37C	-0.50C	-0.62C	-0.75C	-0.87C	-1.00C	-1.12C
-4.00S	-3.87S	-3.75S	-3.62S	-3.50S	-3.37S	-3.25S	-3.12S	-3.00S	-2.87S
	-0.12C	-0.25C	-0.37C	-0.50C	-0.62C	-0.75C	-0.87C	-1.00C	-1.12C
-4.25S	-4.12S	-4.00S	-3.87S	-3.75S	-3.62S	-3.50S	-3.37S	-3.25S	-3.12S
	-0.12C	-0.25C	-0.37C	-0.50C	-0.62C	-0.75C	-0.87C	-1.00C	-1.12C

The letter S represents Sphere

The letter C represents Cylinder

Transposition Table No. 3.

 $(-\bigcirc+)$

Spheres From -0.12 to -1.62
 Combined With
 Cylinders From $+1.25$ to $+2.25$

	+1.25C	+1.37C	+1.50C	+1.62C	+1.75C	+1.87C	+2.00C	+2.12C	+2.25C
-0.12S	+1.12S -1.25C	+1.25S -1.37C	+1.37S -1.50C	+1.50S -1.62C	+1.62S -1.75C	+1.75S -1.87C	+1.87S -2.00C	+2.00S -2.12C	+2.12S -2.25C
-0.25S	+1.00S -1.25C	+1.12S -1.37C	+1.25S -1.50C	+1.37S -1.62C	+1.50S -1.75C	+1.62S -1.87C	+1.75S -2.00C	+1.87S -2.12C	+2.00S -2.25C
-0.37S	+0.87S -1.25C	+1.00S -1.37C	+1.12S -1.50C	+1.25S -1.62C	+1.37S -1.75C	+1.50S -1.87C	+1.62S -2.00C	+1.75S -2.12C	+1.87S -2.25C
-0.50S	+0.75S -1.25C	+0.87S -1.37C	+1.00S -1.50C	+1.12S -1.62C	+1.25S -1.75C	+1.37S -1.87C	+1.50S -2.00C	+1.62S -2.12C	+1.75S -2.25C
-0.62S	+0.62S -1.25C	+0.75S -1.37C	+0.87S -1.50C	+1.00S -1.62C	+1.12S -1.75C	+1.25S -1.87C	+1.37S -2.00C	+1.50S -2.12C	+1.62S -2.25C
-0.75S	+0.50S -1.25C	+0.62S -1.37C	+0.75S -1.50C	+0.87S -1.62C	+1.00S -1.75C	+1.12S -1.87C	+1.25S -2.00C	+1.37S -2.12C	+1.50S -2.25C
-0.87S	+0.37S -1.25C	+0.50S -1.37C	+0.62S -1.50C	+0.75S -1.62C	+0.87S -1.75C	+1.00S -1.87C	+1.12S -2.00C	+1.25S -2.12C	+1.37S -2.25C
-1.00S	+0.25S -1.25C	+0.37S -1.37C	+0.50S -1.50C	+0.62S -1.62C	+0.75S -1.75C	+0.87S -1.87C	+1.00S -2.00C	+1.12S -2.12C	+1.25S -2.25C
-1.12S	+0.12S -1.25C	+0.25S -1.37C	+0.37S -1.50C	+0.50S -1.62C	+0.62S -1.75C	+0.75S -1.87C	+0.87S -2.00C	+1.00S -2.12C	+1.12S -2.25C
-1.25S	Pl. Cyl. -1.25C	+0.12S -1.37C	+0.25S -1.50C	+0.37S -1.62C	+0.50S -1.75C	+0.62S -1.87C	+0.75S -2.00C	+0.87S -2.12C	+1.00S -2.25C
-1.37S	-0.12S -1.25C	Pl. Cyl. -1.37C	+0.12S -1.50C	+0.25S -1.62C	+0.37S -1.75C	+0.50S -1.87C	+0.62S -2.00C	+0.75S -2.12C	+0.87S -2.25C
-1.50S	-0.25S -1.25C	-0.12S -1.37C	Pl. Cyl. -1.50C	+0.12S -1.62C	+0.25S -1.75C	+0.37S -1.87C	+0.50S -2.00C	+0.62S -2.12C	+0.75S -2.25C
-1.62S	-0.37S -1.25C	-0.25S -1.37C	-0.12S -1.50C	Pl. Cyl. -1.62C	+0.12S -1.75C	+0.25S -1.87C	+0.37S -2.00C	+0.50S -2.12C	+0.62S -2.25C

The letter S represents Sphere

The letter C represents Cylinder

Transposition Table No. 4.

(—○+)

Spheres From —1.75 to —4.25
Combined With
Cylinders from +1.25 to +2.25

	+1.25C	+1.37C	+1.50C	+1.62C	+1.75C	+1.87C	+2.00C	+2.12C	+2.25C
—1.75S	—0.50S —1.25C	—0.37S —1.37C	—1.50C —0.25S	—1.62C —1.62C	Pl. Cyl. —1.75C	+0.12S —1.87C	+0.25S —2.00C	+0.37S —2.12C	+0.50S —2.25C
—1.87S	—0.62S —1.25C	—0.50S —1.37C	—0.37S —1.50C	—0.37S S 27'0—	—0.12S —1.75C	Pl. Cyl. —1.87C	+0.12S —2.00C	+0.25S —2.12C	+0.37S —2.25C
—2.00S	—0.75S —1.25C	—0.62S —1.37C	—0.50S —1.50C	—0.12S —1.62C	—0.25S —1.75C	—0.12S —1.87C	Pl. Cyl. —2.00C	+0.12S —2.12C	+0.25S —2.25C
—2.12S	—0.87S —1.25C	—0.75S —1.37C	—0.62S —1.50C	—0.50S —1.62C	—0.37S —1.75C	—0.25S —1.87C	—0.12S —2.00C	Pl. Cyl. —2.12C	+0.12S —2.25C
—2.25S	—1.00S —1.25C	—0.87S —1.37C	—0.75S —1.50C	—0.62S —1.62C	—0.50S —1.75C	—0.37S —1.87C	—0.25S —2.00C	—0.12S —2.12C	Pl. Cyl. —2.25C
—2.50S	—1.25S —1.25C	—1.12S —1.37C	—1.00S —1.50C	—0.87S —1.62C	—0.75S —1.75C	—0.62S —1.87C	—0.50S —2.00C	—0.37S —2.12C	—0.25S —2.25C
—2.75S	—1.50S —1.25C	—1.37S —1.37C	—1.25S —1.50C	—1.12S —1.62C	—1.00S —1.75C	—0.87S —1.87C	—0.75S —2.00C	—0.62S —2.12C	—0.50S —2.25C
—3.00S	—1.75S —1.25C	—1.62S —1.37C	—1.50S —1.50C	—1.37S —1.62C	—1.25S —1.75C	—1.12S —1.87C	—1.00S —2.00C	—0.87S —2.12C	—0.75S —2.25C
—3.25S	—2.00S —1.25C	—1.87S —1.37C	—1.75S —1.50C	—1.62S —1.62C	—1.50S —1.75C	—1.37S —1.87C	—1.25S —2.00C	—1.12S —2.12C	—1.00S —2.25C
—3.50S	—2.25S —1.25C	—2.12S —1.37C	—2.00S —1.50C	—1.87S —1.62C	—1.75S —1.75C	—1.62S —1.87C	—1.50S —2.00C	—1.37S —2.12C	—1.25S —2.25C
—3.75S	—2.50S —1.25C	—2.37S —1.37C	—2.25S —1.50C	—2.12S —1.62C	—2.00S —1.75C	—1.87S —1.87C	—1.75S —2.00C	—1.62S —2.12C	—1.50S —2.25C
—4.00S	—2.75S —1.25C	—2.62S —1.37C	—2.50S —1.50C	—2.37S —1.62C	—2.25S —1.75C	—2.12S —1.87C	—2.00S —2.00C	—1.87S —2.12C	—1.75S —2.25C
—4.25S	—3.00S —1.25C	—2.87S —1.37C	—2.75S —1.50C	—2.62S —1.62C	—2.50S —1.75C	—2.37S —1.87C	—2.25S —2.00C	—2.12S —2.12C	—2.00S —2.25C

The letter S represents Sphere

The letter C represents Cylinder

Transposition Table No. 5.

(-○+)

Spheres From -0.12 to -1.62
Combined With
Cylinders From +2.50 to +4.25

	+2.50C	+2.75C	+3.00C	+3.25C	+3.50C	+3.75C	+4.00C	+4.25C
-0.12S	+2.37S -2.50C	+2.62S -2.75C	+2.87S -3.00C	+3.12S -3.25C	+3.37S -3.50C	+3.62S -3.75C	+3.87S -4.00C	+4.12S -4.25C
-0.25S	+2.25S -2.50C	+2.50S -2.75C	+2.75S -3.00C	+3.00S -3.25C	+3.25S -3.50C	+3.50S -3.75C	+3.75S -4.00C	+4.00S -4.25C
-0.37S	+2.12S -2.50C	+2.37S -2.75C	+2.62S -3.00C	+2.87S -3.25C	+3.12S -3.50C	+3.37S -3.75C	+3.62S -4.00C	+3.87S -4.25C
-0.50S	+2.00S -2.50C	+2.25S -2.75C	+2.50S -3.00C	+2.75S -3.25C	+3.00S -3.50C	+3.25S -3.75C	+3.50S -4.00C	+3.75S -4.25C
-0.62S	+1.87S -2.50C	+2.12S -2.75C	+2.37S -3.00C	+2.62S -3.25C	+2.87S -3.50C	+3.12S -3.75C	+3.37S -4.00C	+3.62S -4.25C
-0.75S	+1.75S -2.50C	+2.00S -2.75C	+2.25S -3.00C	+2.50S -3.25C	+2.75S -3.50C	+3.00S -3.75C	+3.25S -4.00C	+3.50S -4.25C
-0.87S	+1.62S -2.50C	+1.87S -2.75C	+2.12S -3.00C	+2.37S -3.25C	+2.62S -3.50C	+2.87S -3.75C	+3.12S -4.00C	+3.37S -4.25C
-1.00S	+1.50S -2.50C	+1.75S -2.75C	+2.00S -3.00C	+2.25S -3.25C	+2.50S -3.50C	+2.75S -3.75C	+3.00S -4.00C	+3.25S -4.25C
-1.12S	+1.37S -2.50C	+1.62S -2.75C	+1.87S -3.00C	+2.12S -3.25C	+2.37S -3.50C	+2.62S -3.75C	+2.87S -4.00C	+3.12S -4.25C
-1.25S	+1.25S -2.50C	+1.50S -2.75C	+1.75S -3.00C	+2.00S -3.25C	+2.25S -3.50C	+2.50S -3.75C	+2.75S -4.00C	+3.00S -4.25C
-1.37S	+1.12S -2.50C	+1.37S -2.75C	+1.62S -3.00C	+1.87S -3.25C	+2.12S -3.50C	+2.37S -3.75C	+2.62S -4.00C	+2.87S -4.25C
-1.50S	+1.00S -2.50C	+1.25S -2.75C	+1.50S -3.00C	+1.75S -3.25C	+2.00S -3.50C	+2.25S -3.75C	+2.50S -4.00C	+2.75S -4.25C
-1.62S	+0.87S -2.50C	+1.12S -2.75C	+1.37S -3.00C	+1.62S -3.25C	+1.87S -3.50C	+2.12S -3.75C	+2.37S -4.00C	+2.62S -4.25C

The letter S represents Sphere

The letter C represents Cylinder

Transposition Table No. 6.

$$(-\bigcirc+)$$

Spheres From -1.75 to -4.25
 Combined With
 Cylinders From $+2.50$ to $+4.25$

	+2.50C	+2.75C	+3.00C	+3.25C	+3.50C	+3.75C	+4.00C	+4.25C
—1.75S	+0.75S —2.50C	+1.00S —2.75C	+1.25S —3.00C	+1.50S —3.25C	+1.75S —3.50C	+2.00S —3.75C	+2.25S —4.00C	+2.50S —4.25C
—1.87S	+0.62S —2.50C	+0.87S —2.75C	+1.12S —3.00C	+1.37S —3.25C	+1.62S —3.50C	+1.87S —3.75C	+2.12S —4.00C	+2.37S —4.25C
—2.00S	+0.50S —2.50C	+0.75S —2.75C	+1.00S —3.00C	+1.25S —3.25C	+1.50S —3.50C	+1.75S —3.75C	+2.00S —4.00C	+2.25S —4.25C
—2.12S	+0.37S —2.50C	+0.62S —2.75C	+0.87S —3.00C	+1.12S —3.25C	+1.37S —3.50C	+1.62S —3.75C	+1.87S —4.00C	+2.12S —4.25C
—2.25S	+0.25S —2.50C	+0.50S —2.75C	+0.75S —3.00C	+1.00S —3.25C	+1.25S —3.50C	+1.50S —3.75C	+1.75S —4.00C	+2.00S —4.25C
—2.50S	Pl. Cyl. —2.50C	+0.25S —2.75C	+0.50S —3.00C	+0.75S —3.25C	+1.00S —3.50C	+1.25S —3.75C	+1.50S —4.00C	+1.75S —4.25C
—2.75S	—0.25S —2.50C	Pl. Cyl. —2.75C	+0.25S —3.00C	+0.50S —3.25C	+0.75S —3.50C	+1.00S —3.75C	+1.25S —4.00C	+1.50S —4.25C
—3.00S	—0.50S —2.50C	—0.25S —2.75C	Pl. Cyl. —3.00C	+0.25S —3.25C	+0.50S —3.50C	+0.75S —3.75C	+1.00S —4.00C	+1.25S —4.25C
—3.25S	—0.75S —2.50C	—0.50S —2.75C	—0.25S —3.00C	Pl. Cyl. —3.25C	+0.25S —3.50C	+0.50S —3.75C	+0.75S —4.00C	+1.00S —4.25C
—3.50S	—1.00S —2.50C	—0.75S —2.75C	—0.50S —3.00C	—0.25S —3.25C	Pl. Cyl. —3.50C	+0.25S —3.75C	+0.50S —4.00C	+0.75S —4.25C
—3.75S	—1.25S —2.50C	—1.00S —2.75C	—0.75S —3.00C	—0.50S —3.25C	—0.25S —3.50C	Pl. Cyl. —3.75C	+0.25S —4.00C	+0.50S —4.25C
—4.00S	—1.50S —2.50C	—1.25S —2.75C	—1.00S —3.00C	—0.75S —3.25C	—0.50S —3.50C	—0.25S —3.75C	Pl. Cyl. —4.00C	+0.25S —4.25C
—4.25S	—1.75S —2.50C	—1.50S —2.75C	—1.25S —3.00C	—1.00S —3.25C	—0.75S —3.50C	—0.50S —3.75C	—0.25S —4.00C	Pl. Cyl. —4.25C

The letter S represents Sphere

The letter C represents Cylinder

CHAPTER V.

TRANSPOSING MINUS ON MINUS

(—○—)

Minus on minus compound prescriptions are Transposed similar to plus on plus compound prescriptions; that is, you add the power of the sphere and the power of the cylinder together, and the total is the sphere of the new or Transposed prescription. After this has been done, combine with this sphere a cylinder of the same power as cylinder of original prescription, but opposite sign and opposite axis.

Here we will take a few prescriptions calling for minus on minus compounds and Transpose to compounds with plus cylinders.

Example No. 1

Original Prescription	—0.25 Sph.○—0.75 Cyl. Axis	25°
Add Cylinder	—0.75	Add 90°
Transposed is	—1.00 Sph.○+0.75 Cyl. Axis	115°

Example No. 2

Original Prescription	—2.00 Sph.○—1.75 Cyl. Axis	95°
Add Cylinder	—1.75	Subtract 90°
Transposed is	—3.75 Sph.○+1.75 Cyl. Axis	5°

Example No. 3

Original Prescription	—1.50 Sph.○—0.75 Cyl. Axis	180°
Add Cylinder	—0.75	Subtract 90°
Transposed is	—2.25 Sph.○+0.75 Cyl. Axis	90°

Example No. 4

Original Prescription	—0.50 Sph.○—0.50 Cyl. Axis	30°
Add Cylinder	—0.50	Add 90°
Transposed is	—1.00 Sph.○+0.50 Cyl. Axis	120°

Example No. 5

Original Prescription	—2.75 Sph. ◯ —1.25 Cyl. Axis 165°
Add Cylinder	—1.25 Subtract 90°
Transposed is	—4.00 Sph. ◯ +1.25 Cyl. Axis 75°

Example No. 6

Original Prescription	—0.75 Sph. ◯ —1.75 Cyl. Axis 35°
Add Cylinder	—1.75 Add 90°
Transposed is	—2.50 Sph. ◯ +1.75 Cyl. Axis 125°

ILLUSTRATION OF EXAMPLE NO. 6 (TORIC)

Original Prescription
—0.75 Sph. ◯ —1.75 Cyl. Ax. 35

Outside
Curve
+5.25

Inside Curves
—6.00 Ax. 35
—7.75 Ax. 125



Transposed Prescription
—2.50 Sph. ◯ +1.75 Cyl. Ax. 125

Outside Curves
+6.00 Ax. 125
+7.75 Ax. 35

Inside
Curve
—8.50



Transposition Table No. 1.

(—○—)

Spheres From —0.12 to —1.62
 Combined With
 Cylinders From —0.12 to —1.12

	—0.12C	—0.25C	—0.37C	—0.50C	—0.62C	—0.75C	—0.87C	—1.00C	—1.12C
—0.12S	—0.25S +0.12C	—0.37S +0.25C	—0.50S +0.37C	—0.62S +0.50C	—0.75S +0.62C	—0.87S +0.75C	—1.00S +0.87C	—1.12S +1.00C	—1.25S +1.12C
—0.25S	—0.37S +0.12C	—0.50S +0.25C	—0.62S +0.37C	—0.75S +0.50C	—0.87S +0.62C	—1.00S +0.75C	—1.12S +0.87C	—1.25S +1.00C	—1.37S +1.12C
—0.37S	—0.50S +0.12C	—0.62S +0.25C	—0.75S +0.37C	—0.87S +0.50C	—1.00S +0.62C	—1.12S +0.75C	—1.25S +0.87C	—1.37S +1.00C	—1.50S +1.12C
—0.50S	—0.62S +0.12C	—0.75S +0.25C	—0.87S +0.37C	—1.00S +0.50C	—1.12S +0.62C	—1.25S +0.75C	—1.37S +0.87C	—1.50S +1.00C	—1.62S +1.12C
—0.62S	—0.75S +0.12C	—0.87S +0.25C	—1.00S +0.37C	—1.12S +0.50C	—1.25S +0.62C	—1.37S +0.75C	—1.50S +0.87C	—1.62S +1.00C	—1.75S +1.12C
—0.75S	—0.87S +0.12C	—1.00S +0.25C	—1.12S +0.37C	—1.25S +0.50C	—1.37S +0.62C	—1.50S +0.75C	—1.62S +0.87C	—1.75S +1.00C	—1.87S +1.12C
—0.87S	—1.00S +0.12C	—1.12S +0.25C	—1.25S +0.37C	—1.37S +0.50C	—1.50S +0.62C	—1.62S +0.75C	—1.75S +0.87C	—1.87S +1.00C	—2.00S +1.12C
—1.00S	—1.12S +0.12C	—1.25S +0.25C	—1.37S +0.37C	—1.50S +0.50C	—1.62S +0.62C	—1.75S +0.75C	—1.87S +0.87C	—2.00S +1.00C	—2.12S +1.12C
—1.12S	—1.25S +0.12C	—1.37S +0.25C	—1.50S +0.37C	—1.62S +0.50C	—1.75S +0.62C	—1.87S +0.75C	—2.00S +0.87C	—2.12S +1.00C	—2.25S +1.12C
—1.25S	—1.37S +0.12C	—1.50S +0.25C	—1.62S +0.37C	—1.75S +0.50C	—1.87S +0.62C	—2.00S +0.75C	—2.12S +0.87C	—2.25S +1.00C	—2.37S +1.12C
—1.37S	—1.50S +0.12C	—1.62S +0.25C	—1.75S +0.37C	—1.87S +0.50C	—2.00S +0.62C	—2.12S +0.75C	—2.25S +0.87C	—2.37S +1.00C	—2.50S +1.12C
—1.50S	—1.62S +0.12C	—1.75S +0.25C	—1.87S +0.37C	—2.00S +0.50C	—2.12S +0.62C	—2.25S +0.75C	—2.37S +0.87C	—2.50S +1.00C	—2.62S +1.12C
—1.62S	—1.75S +0.12C	—1.87S +0.25C	—2.00S +0.37C	—2.12S +0.50C	—2.25S +0.62C	—2.37S +0.75C	—2.50S +0.87C	—2.62S +1.00C	—2.75S +1.12C

The letter S represents Sphere

The letter C represents Cylinder

Transposition Table No. 2.

(—○—)

Spheres From —1.75 to —4.25
Combined With
Cylinders From —0.12 to —1.12

	—0.12C	—0.25C	—0.37C	—0.50C	—0.62C	—0.75C	—0.87C	—1.00C	—1.12C
—1.75S	—1.87S +0.12C	—2.00S +0.25C	—2.12S +0.37C	—2.25S +0.50C	—2.37S +0.62C	—2.50S +0.75C	—2.62S +0.87C	—2.75S +1.00C	—2.87S +1.12C
—1.87S	—2.00S +0.12C	—2.12S +0.25C	—2.25S +0.37C	—2.37S +0.50C	—2.50S +0.62C	—2.62S +0.75C	—2.75S +0.87C	—2.87S +1.00C	—3.00S +1.12C
—2.00S	—2.12S +0.12C	—2.25S +0.25C	—2.37S +0.37C	—2.50S +0.50C	—2.62S +0.62C	—2.75S +0.75C	—2.87S +0.87C	—3.00S +1.00C	—3.12S +1.12C
—2.12S	—2.25S +0.12C	—2.37S +0.25C	—2.50S +0.37C	—2.62S +0.50C	—2.75S +0.62C	—2.87S +0.75C	—3.00S +0.87C	—3.12S +1.00C	—3.25S +1.12C
—2.25S	—2.37S +0.12C	—2.50S +0.25C	—2.62S +0.37C	—2.75S +0.50C	—2.87S +0.62C	—3.00S +0.75C	—3.12S +0.87C	—3.25S +1.00C	—3.37S +1.12C
—2.50S	—2.62S +0.12C	—2.75S +0.25C	—2.87S +0.37C	—3.00S +0.50C	—3.12S +0.62C	—3.25S +0.75C	—3.37S +0.87C	—3.50S +1.00C	—3.62S +1.12C
—2.75S	—2.87S +0.12C	—3.00S +0.25C	—3.12S +0.37C	—3.25S +0.50C	—3.37S +0.62C	—3.50S +0.75C	—3.62S +0.87C	—3.75S +1.00C	—3.87S +1.12C
—3.00S	—3.12S +0.12C	—3.25S +0.25C	—3.37S +0.37C	—3.50S +0.50C	—3.62S +0.62C	—3.75S +0.75C	—3.87S +0.87C	—4.00S +1.00C	—4.12S +1.12C
—3.25S	—3.37S +0.12C	—3.50S +0.25C	—3.62S +0.37C	—3.75S +0.50C	—3.87S +0.62C	—4.00S +0.75C	—4.12S +0.87C	—4.25S +1.00C	—4.37S +1.12C
—3.50S	—3.62S +0.12C	—3.75S +0.25C	—3.87S +0.37C	—4.00S +0.50C	—4.12S +0.62C	—4.25S +0.75C	—4.37S +0.87C	—4.50S +1.00C	—4.62S +1.12C
—3.75S	—3.87S +0.12C	—4.00S +0.25C	—4.12S +0.37C	—4.25S +0.50C	—4.37S +0.62C	—4.50S +0.75C	—4.62S +0.87C	—4.75S +1.00C	—4.87S +1.12C
—4.00S	—4.12S +0.12C	—4.25S +0.25C	—4.37S +0.37C	—4.50S +0.50C	—4.62S +0.62C	—4.75S +0.75C	—4.87S +0.87C	—5.00S +1.00C	—5.12S +1.12C
—4.25S	—4.37S +0.12C	—4.50S +0.25C	—4.62S +0.37C	—4.75S +0.50C	—4.87S +0.62C	—5.00S +0.75C	—5.12S +0.87C	—5.25S +1.00C	—5.37S +1.12C

The letter S represents Sphere

The letter C represents Cylinder

Transposition Table No. 3.

(—○—)

Spheres From —0.12 to —1.62
Combined With
Cylinders From —1.25 to —2.25

	—1.25C	—1.37C	—1.50C	—1.62C	—1.75C	—1.87C	—2.00C	—2.12C	—2.25C
—0.12S	—1.37S +1.25C	—1.50S +1.37C	—1.62S +1.50C	—1.75S +1.62C	—1.87S +1.75C	—2.00S +1.87C	—2.12S +2.00C	—2.25S +2.12C	—2.37S +2.25C
—0.25S	—1.50S +1.25C	—1.62S +1.37C	—1.75S +1.50C	—1.87S +1.62C	—2.00S +1.75C	—2.12S +1.87C	—2.25S +2.00C	—2.37S +2.12C	—2.50S +2.25C
—0.37S	—1.62S +1.25C	—1.75S +1.37C	—1.87S +1.50C	—2.00S +1.62C	—2.12S +1.75C	—2.25S +1.87C	—2.37S +2.00C	—2.50S +2.12C	—2.62S +2.25C
—0.50S	—1.75S +1.25C	—1.87S +1.37C	—2.00S +1.50C	—2.12S +1.62C	—2.25S +1.75C	—2.37S +1.87C	—2.50S +2.00C	—2.62S +2.12C	—2.75S +2.25C
—0.62S	—1.87S +1.25C	—2.00S +1.37C	—2.12S +1.50C	—2.25S +1.62C	—2.37S +1.75C	—2.50S +1.87C	—2.62S +2.00C	—2.75S +2.12C	—2.87S +2.25C
—0.75S	—2.00S +1.25C	—2.12S +1.37C	—2.25S +1.50C	—2.37S +1.62C	—2.50S +1.75C	—2.62S +1.87C	—2.75S +2.00C	—2.87S +2.12C	—3.00S +2.25C
—0.87S	—2.12S +1.25C	—2.25S +1.37C	—2.37S +1.50C	—2.50S +1.62C	—2.62S +1.75C	—2.75S +1.87C	—2.87S +2.00C	—3.00S +2.12C	—3.12S +2.25C
—1.00S	—2.25S +1.25C	—2.37S +1.37C	—2.50S +1.50C	—2.62S +1.62C	—2.75S +1.75C	—2.87S +1.87C	—3.00S +2.00C	—3.12S +2.12C	—3.25S +2.25C
—1.12S	—2.37S +1.25C	—2.50S +1.37C	—2.62S +1.50C	—2.75S +1.62C	—2.87S +1.75C	—3.00S +1.87C	—3.12S +2.00C	—3.25S +2.12C	—3.37S +2.25C
—1.25S	—2.50S +1.25C	—2.62S +1.37C	—2.75S +1.50C	—2.87S +1.62C	—3.00S +1.75C	—3.12S +1.87C	—3.25S +2.00C	—3.37S +2.12C	—3.50S +2.25C
—1.37S	—2.62S +1.25C	—2.75S +1.37C	—2.87S +1.50C	—3.00S +1.62C	—3.12S +1.75C	—3.25S +1.87C	—3.37S +2.00C	—3.50S +2.12C	—3.62S +2.25C
—1.50S	—2.75S +1.25C	—2.87S +1.37C	—3.00S +1.50C	—3.12S +1.62C	—3.25S +1.75C	—3.37S +1.87C	—3.50S +2.00C	—3.62S +2.12C	—3.75S +2.25C
—1.62S	—2.87S +1.25C	—3.00S +1.37C	—3.12S +1.50C	—3.25S +1.62C	—3.37S +1.75C	—3.50S +1.87C	—3.62S +2.00C	—3.75S +2.12C	—3.87S +2.25C

The letter S represents Sphere
The letter C represents Cylinder

TRANSPPOSITIONS and TABLES

Transposition Table No. 4.

(—○—)

Spheres From —1.75 to —4.25
Combined With
Cylinders From —1.25 to —2.25

	—1.25C	—1.37C	—1.50C	—1.62C	—1.75C	—1.87C	—2.00C	—2.12C	—2.25C
—1.75S	—3.00S +1.25C	—3.12S +1.37C	—3.25S +1.50C	—3.37S +1.62C	—3.50S +1.75C	—3.62S +1.87C	—3.75S +2.00C	—3.87S +2.12C	—4.00S +2.25C
—1.87S	—3.12S +1.25C	—3.25S +1.37C	—3.37S +1.50C	—3.50S +1.62C	—3.62S +1.75C	—3.75S +1.87C	—3.87S +2.00C	—4.00S +2.12C	—4.12S +2.25C
—2.00S	—3.25S +1.25C	—3.37S +1.37C	—3.50S +1.50C	—3.62S +1.62C	—3.75S +1.75C	—3.87S +1.87C	—4.00S +2.00C	—4.12S +2.12C	—4.25S +2.25C
—2.12S	—3.37S +1.25C	—3.50S +1.37C	—3.62S +1.50C	—3.75S +1.62C	—3.87S +1.75C	—4.00S +1.87C	—4.12S +2.00C	—4.25S +2.12C	—4.37S +2.25C
—2.25S	—3.50S +1.25C	—3.62S +1.37C	—3.75S +1.50C	—3.87S +1.62C	—4.00S +1.75C	—4.12S +1.87C	—4.25S +2.00C	—4.37S +2.12C	—4.50S +2.25C
—2.50S	—3.75S +1.25C	—3.87S +1.37C	—4.00S +1.50C	—4.12S +1.62C	—4.25S +1.75C	—4.37S +1.87C	—4.50S +2.00C	—4.62S +2.12C	—4.75S +2.25C
—2.75S	—4.00S +1.25C	—4.12S +1.37C	—4.25S +1.50C	—4.37S +1.62C	—4.50S +1.75C	—4.62S +1.87C	—4.75S +2.00C	—4.87S +2.12C	—5.00S +2.25C
—3.00S	—4.25S +1.25C	—4.37S +1.37C	—4.50S +1.50C	—4.62S +1.62C	—4.75S +1.75C	—4.87S +1.87C	—5.00S +2.00C	—5.12S +2.12C	—5.25S +2.25C
—3.25S	—4.50S +1.25C	—4.62S +1.37C	—4.75S +1.50C	—4.87S +1.62C	—5.00S +1.75C	—5.12S +1.87C	—5.25S +2.00C	—5.37S +2.12C	—5.50S +2.25C
—3.50S	—4.75S +1.25C	—4.87S +1.37C	—5.00S +1.50C	—5.12S +1.62C	—5.25S +1.75C	—5.37S +1.87C	—5.50S +2.00C	—5.62S +2.12C	—5.75S +2.25C
—3.75S	—5.00S +1.25C	—5.12S +1.37C	—5.25S +1.50C	—5.37S +1.62C	—5.50S +1.75C	—5.62S +1.87C	—5.75S +2.00C	—5.87S +2.12C	—6.00S +2.25C
—4.00S	—5.25S +1.25C	—5.37S +1.37C	—5.50S +1.50C	—5.62S +1.62C	—5.75S +1.75C	—5.87S +1.87C	—6.00S +2.00C	—6.12S +2.12C	—6.25S +2.25C
—4.25S	—5.50S +1.25C	—5.62S +1.37C	—5.75S +1.50C	—5.87S +1.62C	—6.00S +1.75C	—6.12S +1.87C	—6.25S +2.00C	—6.37S +2.12C	—6.50S +2.25C

The letter S represents Sphere
The letter C represents Cylinder

Transposition Table No. 5.

(—○—)

Spheres From —0.12 to —1.62
Combined With
Cylinders From —2.50 to —4.25

	—2.50C	—2.75C	—3.00C	—3.25C	—3.50C	—3.75C	—4.00C	—4.25C
—0.12S	—2.62S +2.50C	—2.87S +2.75C	—3.12S +3.00C	—3.37S +3.25C	—3.62S +3.50C	—3.87S +3.75C	—4.12S +4.00C	—4.37S +4.25C
—0.25S	—2.75S +2.50C	—3.00S +2.75C	—3.25S +3.00C	—3.50S +3.25C	—3.75S +3.50C	—4.00S +3.75C	—4.25S +4.00C	—4.50S +4.25C
—0.37S	—2.87S +2.50C	—3.12S +2.75C	—3.37S +3.00C	—3.62S +3.25C	—3.87S +3.50C	—4.12S +3.75C	—4.37S +4.00C	—4.62S +4.25C
—0.50S	—3.00S +2.50C	—3.25S +2.75C	—3.50S +3.00C	—3.75S +3.25C	—4.00S +3.50C	—4.25S +3.75C	—4.50S +4.00C	—4.75S +4.25C
—0.62S	—3.12S +2.50C	—3.37S +2.75C	—3.62S +3.00C	—3.87S +3.25C	—4.12S +3.50C	—4.37S +3.75C	—4.62S +4.00C	—4.87S +4.25C
—0.75S	—3.25S +2.50C	—3.50S +2.75C	—3.75S +3.00C	—4.00S +3.25C	—4.25S +3.50C	—4.50S +3.75C	—4.75S +4.00C	—5.00S +4.25C
—0.87S	—3.37S +2.50C	—3.62S +2.75C	—3.87S +3.00C	—4.12S +3.25C	—4.37S +3.50C	—4.62S +3.75C	—4.87S +4.00C	—5.12S +4.25C
—1.00S	—3.50S +2.50C	—3.75S +2.75C	—4.00S +3.00C	—4.25S +3.25C	—4.50S +3.50C	—4.75S +3.75C	—5.00S +4.00C	—5.25S +4.25C
—1.12S	—3.62S +2.50C	—3.87S +2.75C	—4.12S +3.00C	—4.37S +3.25C	—4.62S +3.50C	—4.87S +3.75C	—5.12S +4.00C	—5.37S +4.25C
—1.25S	—3.75S +2.50C	—4.00S +2.75C	—4.25S +3.00C	—4.50S +3.25C	—4.75S +3.50C	—5.00S +3.75C	—5.25S +4.00C	—5.50S +4.25C
—1.37S	—3.87S +2.50C	—4.12S +2.75C	—4.37S +3.00C	—4.62S +3.25C	—4.87S +3.50C	—5.12S +3.75C	—5.37S +4.00C	—5.62S +4.25C
—1.50S	—4.00S +2.50C	—4.25S +2.75C	—4.50S +3.00C	—4.75S +3.25C	—5.00S +3.50C	—5.25S +3.75C	—5.50S +4.00C	—5.75S +4.25C
—1.62S	—4.12S +2.50C	—4.37S +2.75C	—4.62S +3.00C	—4.87S +3.25C	—5.12S +3.50C	—5.37S +3.75C	—5.62S +4.00C	—5.87S +4.25C

The letter S represents Sphere

The letter C represents Cylinder

Transposition Table No. 6.

(—○—)

Spheres From —1.75 to —4.25
 Combined With
 Cylinders From —2.50 to —4.25

	—2.50C	—2.75C	—3.00C	—3.25C	—3.50C	—3.75C	—4.00C	—4.25C
—1.75S	—4.25S +2.50C	—4.50S +2.75C	—4.75S +3.00C	—5.00S +3.25C	—5.25S +3.50C	—5.50S +3.75C	—5.75S +4.00C	—6.00S +4.25C
—1.87S	—4.37S +2.50C	—4.62S +2.75C	—4.87S +3.00C	—5.12S +3.25C	—5.37S +3.50C	—5.62S +3.75C	—5.87S +4.00C	—6.12S +4.25C
—2.00S	—4.50S +2.50C	—4.75S +2.75C	—5.00S +3.00C	—5.25S +3.25C	—5.50S +3.50C	—5.75S +3.75C	—6.00S +4.00C	—6.25S +4.25C
—2.12S	—4.62S +2.50C	—4.87S +2.75C	—5.12S +3.00C	—5.37S +3.25C	—5.62S +3.50C	—5.87S +3.75C	—6.12S +4.00C	—6.37S +4.25C
—2.25S	—4.75S +2.50C	—5.00S +2.75C	—5.25S +3.00C	—5.50S +3.25C	—5.75S +3.50C	—6.00S +3.75C	—6.25S +4.00C	—6.50S +4.25C
—2.50S	—5.00S +2.50C	—5.25S +2.75C	—5.50S +3.00C	—5.75S +3.25C	—6.00S +3.50C	—6.25S +3.75C	—6.50S +4.00C	—6.75S +4.25C
—2.75S	—5.25S +2.50C	—5.50S +2.75C	—5.75S +3.00C	—6.00S +3.25C	—6.25S +3.50C	—6.50S +3.75C	—6.75S +4.00C	—7.00S +4.25C
—3.00S	—5.50S +2.50C	—5.75S +2.75C	—6.00S +3.00C	—6.25S +3.25C	—6.50S +3.50C	—6.75S +3.75C	—7.00S +4.00C	—7.25S +4.25C
—3.25S	—5.75S +2.50C	—6.00S +2.75C	—6.25S +3.00C	—6.50S +3.25C	—6.75S +3.50C	—7.00S +3.75C	—7.25S +4.00C	—7.50S +4.25C
—3.50S	—6.00S +2.50C	—6.25S +2.75C	—6.50S +3.00C	—6.75S +3.25C	—7.00S +3.50C	—7.25S +3.75C	—7.50S +4.00C	—7.75S +4.25C
—3.75S	—6.25S +2.50C	—6.50S +2.75C	—6.75S +3.00C	—7.00S +3.25C	—7.25S +3.50C	—7.50S +3.75C	—7.75S +4.00C	—8.00S +4.25C
—4.00S	—6.50S +2.50C	—6.75S +2.75C	—7.00S +3.00C	—7.25S +3.25C	—7.50S +3.50C	—7.75S +3.75C	—8.00S +4.00C	—8.25S +4.25C
—4.25S	—6.75S +2.50C	—7.00S +2.75C	—7.25S +3.00C	—7.50S +3.25C	—7.75S +3.50C	—8.00S +3.75C	—8.25S +4.00C	—8.50S +4.25C

The letter S represents Sphere
 The letter C represents Cylinder

CHAPTER VI.

TRANSPOSING PLAIN CYLINDERS

It is a very simple matter to Transpose plain cylinders. To do this combine with your original cylinder, a sphere of the same denomination as your original cylinder. After this is done, change the sign of cylinder to opposite sign and change axis to opposite axis.

Let us take a few examples on plain cylinders and Transpose them into compounds.

Example No. 1

Original Prescription		+50 Cyl. Axis 85°
Combine Sphere	+0.50	Add 90°
Transposed is	+0.50 Sph. $\ominus$ -0.50 Cyl. Axis 175°	

Example No. 2

Original Prescription		+1.75 Cyl. Axis 165°
Combine Sphere	+1.75	Subtract 90°
Transposed is	+1.75 Sph. $\ominus$ -1.75 Cyl. Axis 75°	

Example No. 3

Original Prescription		+3.00 Cyl. Axis 35°
Combine Sphere	+3.00	Add 90°
Transposed is	+3.00 Sph. $\ominus$ -3.00 Cyl. Axis 125°	

ILLUSTRATION OF EXAMPLE NO 3. (TORIC)

Original Prescription

+3.00 Cyl. Ax. 35

Outside Curves

+6.00 Ax. 35

+9.00 Ax. 125

—6.00

Inside

Curve



Transposed Prescription

+3.00 Sph. $\ominus$ —3.00 Cyl. Ax. 125

Outside

Curve

+9.00

Inside Curves

—6.00 Ax. 125

—9.00 Ax. 35



Example No. 4

Original Prescription

—0.25 Cyl. Axis 15°

Combine Sphere

—0.25

Add 90°

Transposed is

—0.25 Sph. $\ominus$ +0.25 Cyl. Axis 105°

Example No. 5

Original Prescription

—1.25 Cyl. Axis 90°

Combine Sphere

—1.25

Add 90°

Transposed is

—1.25 Sph. $\ominus$ +1.25 Cyl. Axis 180°

Example No. 6

Original Prescription

—2.75 Cyl. Axis 175°

Combine Sphere

—2.75

Subtract 90°

Transposed is

—2.75 Sph. $\ominus$ +2.75 Cyl. Axis 85°

ILLUSTRATION OF EXAMPLE NO. 6 (TORIC)

Original Prescription

-2.75 Cyl. Ax. 175

Outside
Curve
+6.00



Inside Curves
-6.00 Ax. 175
-8.75 Ax. 85

Transposed Prescription

-2.75 Sph. $\ominus$ +2.75 Cyl. Ax. 85

Outside Curves
+6.00 Ax. 85
+8.75 Ax. 175



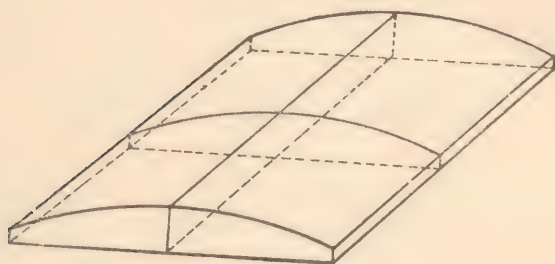
Inside
Curve
-8.75

TRANSPPOSITION TABLE

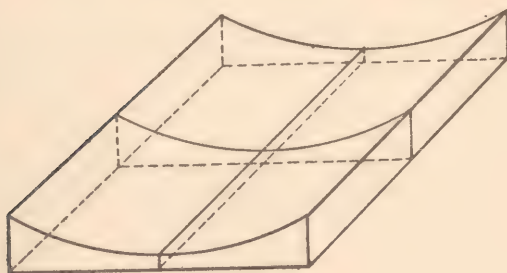
(Plain Cylinders)

Plus Cylinders			Minus Cylinders		
(+) Cyl.	Transposed is Sph.	Cyl.	(-) Cyl.	Transposed is Sph.	Cyl.
+0.12	+0.12	—0.12	—0.12	—0.12	+0.12
+0.25	+0.25	—0.25	—0.25	—0.25	+0.25
+0.37	+0.37	—0.37	—0.37	—0.37	+0.37
+0.50	+0.50	—0.50	—0.50	—0.50	+0.50
+0.62	+0.62	—0.62	—0.62	—0.62	+0.62
+0.75	+0.75	—0.75	—0.75	—0.75	+0.75
+0.87	+0.87	—0.87	—0.87	—0.87	+0.87
+1.00	+1.00	—1.00	—1.00	—1.00	+1.00
+1.12	+1.12	—1.12	—1.12	—1.12	+1.12
+1.25	+1.25	—1.25	—1.25	—1.25	+1.25
+1.37	+1.37	—1.37	—1.37	—1.37	+1.37
+1.50	+1.50	—1.50	—1.50	—1.50	+1.50
+1.62	+1.62	—1.62	—1.62	—1.62	+1.62
+1.75	+1.75	—1.75	—1.75	—1.75	+1.75
+1.87	+1.87	—1.87	—1.87	—1.87	+1.87
+2.00	+2.00	—2.00	—2.00	—2.00	+2.00
+2.12	+2.12	—2.12	—2.12	—2.12	+2.12
+2.25	+2.25	—2.25	—2.25	—2.25	+2.25
+2.37	+2.37	—2.37	—2.37	—2.37	+2.37
+2.50	+2.50	—2.50	—2.50	—2.50	+2.50
+2.62	+2.62	—2.62	—2.62	—2.62	+2.62
+2.75	+2.75	—2.75	—2.75	—2.75	+2.75
+2.87	+2.87	—2.87	—2.87	—2.87	+2.87
+3.00	+3.00	—3.00	—3.00	—3.00	+3.00
+3.25	+3.25	—3.25	—3.25	—3.25	+3.25
+3.50	+3.50	—3.50	—3.50	—3.50	+3.50
+3.75	+3.75	—3.75	—3.75	—3.75	+3.75
+4.00	+4.00	—4.00	—4.00	—4.00	+4.00
+4.25	+4.25	—4.25	—4.25	—4.25	+4.25

FLAT PLANO CONVEX CYLINDER



FLAT PLANO CONCAVE CYLINDER



CHAPTER VII.

TRANSPOSING CROSS CYLINDERS

Transposing a cross cylinder means to change curvatures of the lens, to its equivalent in a compound. A compound is a composition, or combination of a sphere and a cylinder.

Transposing Plus on Plus (+⊖+) and Minus on Minus. (−⊖−).

To transpose a cross cylinder $+\text{C}+$ or $-\text{C}-$ to its equivalent in a compound, subtract the weaker cylinder from the stronger cylinder of your original prescription.

The remainder is the correct cylinder of your transposed lens or compound. For the axis of your compound, use the axis of the stronger cylinder.

After you have done this; combine with this cylinder, a sphere, the same sign and power as that of the weaker cylinder of your original prescription.

Example No. 1

Orig. Prescription +1.50 Cyl. Axis 90° $\ominus$ +2.00 Cyl. Axis 180°
Subtract +1.50

Cylinder of New Compound	+0.50 Cyl. Axis 180°
--------------------------	----------------------

Combine with sphere, as mentioned above.

Complete Prescription	+1.50 Sph.	+0.50 Cyl.	Axis 180°
	or +2.00 Sph.	—0.50 Cyl.	Axis 90°

Example No. 2

Orig. Prescription $+1.00$ Cyl. Axis $180^\circ \ominus +0.50$ Cyl. Axis 90°
 Subtract $+0.50$

Cylinder of New Compound $+0.50$ Cyl. Axis 180°

Combine with sphere, as mentioned above.

Complete Prescription $+0.50$ Sph. $\ominus +0.50$ Cyl. Axis 180°
 or $+1.00$ Sph. $\ominus -0.50$ Cyl. Axis 90°

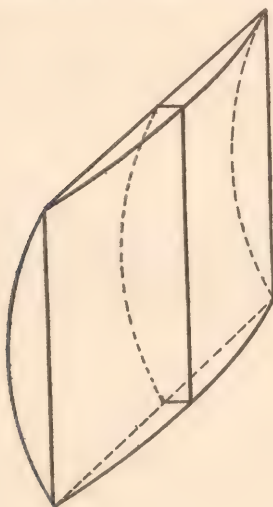
Example No. 3

Orig. Prescription $+1.25$ Cyl. Axis $90^\circ \ominus +3.50$ Cyl. Axis 180°
 Subtract $+1.25$

Cylinder of New Compound $+2.25$ Cyl. Axis 180°

Combine with sphere, as mentioned above.

Complete prescription $+1.25$ Sph. $\ominus +2.25$ Cyl. Axis 180°
 or $+3.50$ Sph. $\ominus -2.25$ Cyl. Axis 90°

FLAT CONVEX CROSS CYLINDER

Example No. 4

Orig. Prescription -0.25 Cyl. Axis 90° $\ominus$ -1.25 Cyl. Axis 180°
Subtract -0.25

Cylinder of New Compound —1.00 Cyl. Axis 180°

Combine with sphere.

Complete Prescription	—0.25	Sph. $\ominus$ —1.00	Cyl. Axis	180°
or	—1.25	Sph. $\ominus$ +1.00	Cyl. Axis	90°

Example No. 5

Orig. Prescription -1.00 Cyl. Axis 90° -2.00 Cyl. Axis 180°
 Subtract -1.00

Cylinder of New Compound —1.00 Cyl. Axis 180°

Combine with sphere.

Complete Prescription	—1.00	Sph. $\ominus$ —1.00	Cyl. Axis	180°
or	—2.00	Sph. $\ominus$ +1.00	Cyl. Axis	90°

Example No. 6

Orig. Prescription —2.00 Cyl. Axis 90° —1.00 Cyl. Axis 180°
 Subtract —1.00

Cylinder of New Compound —1.00 Cyl. Axis 90°

Combine with sphere.

Complete Prescription	—1.00 Sph. ⊖ —1.00 Cyl. Axis	90°
or	—2.00 Sph. ⊖ +1.00 Cyl. Axis	180°

Transposition Table No. 1.
Crossed Cylinders (+C+ and -C-).

	+0.25 Cyl. Axis 180	+0.50 Cyl. Axis 180	+0.75 Cyl. Axis 180
+0.25 Cyl. Axis 90	+0.25 Sphere	+0.25C+0.25 Axis 180	+0.25C+0.50 Axis 180
+0.50 Cyl. Axis 90	+0.25C+0.25 Axis 90	+0.50 Sphere	+0.50C+0.25 Axis 180
+0.75 Cyl. Axis 90	+0.25C+0.50 Axis 90	+0.50C+0.25 Axis 90	+0.75 Sphere
+1.00 Cyl. Axis 90	+0.25C+0.75 Axis 90	+0.50C+0.50 Axis 90	+0.75C+0.25 Axis 90
+1.25 Cyl. axis 90	+0.25C+1.00 Axis 90	+0.50C+0.75 Axis 90	+0.75C+0.50 Axis 90
+1.50 Cyl. Axis 90	+0.25C+1.25 Axis 90	+0.50C+1.00 Axis 90	+0.75C+0.75 Axis 90
+1.75 Cyl. Axis 90	+0.25C+1.50 Axis 90	+0.50C+1.25 Axis 90	+0.75C+1.00 Axis 90
+2.00 Cyl. Axis 90	+0.25C+1.75 Axis 90	+0.50C+1.50 Axis 90	+0.75C+1.25 Axis 90
+2.25 Cyl. Axis 90	+0.25C+2.00 Axis 90	+0.50C+1.75 Axis 90	+0.75C+1.50 Axis 90
+2.50 Cyl. Axis 90	+0.25C+2.25 Axis 90	+0.50C+2.00 Axis 90	+0.75C+1.75 Axis 90
+2.75 Cyl. Axis 90	+0.25C+2.50 Axis 90	+0.50C+2.25 Axis 90	+0.75C+2.00 Axis 90
+3.00 Cyl. Axis 90	+0.25C+2.75 Axis 90	+0.50C+2.50 Axis 90	+0.75C+2.25 Axis 90

For crossed cylinders minus on minus (—C—) use this same chart, but instead of using plus (+) signs use minus (—) signs.

Transposition Table No. 2.
Crossed Cylinders (+ $\bigcirc$ + and - $\bigcirc$ -)

	+1.00 Cyl. Axis 180	+1.25 Cyl. Axis 180	+1.50 Cyl. Axis 180
+0.25 Cyl. Axis 90	+0.25 $\bigcirc$ +0.75 Axis 180	+0.25 $\bigcirc$ +1.00 Axis 180	+0.25 $\bigcirc$ +1.25 Axis 180
+0.50 Cyl. Axis 90	+0.50 $\bigcirc$ +0.50 Axis 180	+0.50 $\bigcirc$ +0.75 Axis 180	+0.50 $\bigcirc$ +1.00 Axis 180
+0.75 Cyl. Axis 90	+0.75 $\bigcirc$ +0.25 Axis 180	+0.75 $\bigcirc$ +0.50 Axis 180	+0.75 $\bigcirc$ +0.75 Axis 180
+1.00 Cyl. Axis 90	+1.00 Sphere	+1.00 $\bigcirc$ +0.25 Axis 180	+1.00 $\bigcirc$ +0.50 Axis 180
+1.25 Cyl. Axis 90	+1.00 $\bigcirc$ +0.25 Axis 90	+1.25 Sphere	+1.25 $\bigcirc$ +0.25 Axis 180
+1.50 Cyl. Axis 90	+1.00 $\bigcirc$ +0.50 Axis 90	+1.25 $\bigcirc$ +0.25 Axis 90	+1.50 Sphere
+1.75 Cyl. Axis 90	+1.00 $\bigcirc$ +0.75 Axis 90	+1.25 $\bigcirc$ +0.50 Axis 90	+1.50 $\bigcirc$ +0.25 Axis 90
+2.00 Cyl. Axis 90	+1.00 $\bigcirc$ +1.00 Axis 90	+1.25 $\bigcirc$ +0.75 Axis 90	+1.50 $\bigcirc$ +0.50 Axis 90
+2.25 Cyl. Axis 90	+1.00 $\bigcirc$ +1.25 Axis 90	+1.25 $\bigcirc$ +1.00 Axis 90	+1.50 $\bigcirc$ +0.75 Axis 90
+2.50 Cyl. Axis 90	+1.00 $\bigcirc$ +1.50 Axis 90	+1.25 $\bigcirc$ +1.25 Axis 90	+1.50 $\bigcirc$ +1.00 Axis 90
+2.75 Cyl. Axis 90	+1.00 $\bigcirc$ +1.75 Axis 90	+1.25 $\bigcirc$ +1.50 Axis 90	+1.50 $\bigcirc$ +1.25 Axis 90
+300 Cyl. Axis 90	+1.00 $\bigcirc$ +2.00 Axis 90	+1.25 $\bigcirc$ +1.75 Axis 90	+1.50 $\bigcirc$ +1.50 Axis 90

For crossed cylinders minus on minus (- $\bigcirc$ -) use this same chart, but instead of using plus (+) signs use minus (-) signs.

Transposition Table No. 3.
Crossed Cylinders (+ $\bigcirc$ + and $-\bigcirc-$)

	+1.75 Cyl. Axis 180	+2.00 Cyl. Axis 180	+2.25 Cyl. Axis 180
+0.25 Cyl. Axis 90	+0.25 $\bigcirc$ +1.50 Axis 180	+0.25 $\bigcirc$ +1.75 Axis 180	+0.25 $\bigcirc$ +2.00 Axis 180
+0.50 Cyl. Axis 90	+0.50 $\bigcirc$ +1.25 Axis 180	+0.50 $\bigcirc$ +1.50 Axis 180	+0.50 $\bigcirc$ +1.75 Axis 180
+0.75 Cyl. Axis 90	+0.75 $\bigcirc$ +1.00 Axis 180	+0.75 $\bigcirc$ +1.25 Axis 180	+0.75 $\bigcirc$ +1.50 Axis 180
+1.00 Cyl. Axis 90	+1.00 $\bigcirc$ +0.75 Axis 180	+1.00 $\bigcirc$ +1.00 Axis 180	+1.00 $\bigcirc$ +1.25 Axis 180
+1.25 Cyl. Axis 90	+1.25 $\bigcirc$ +0.50 Axis 180	+1.25 $\bigcirc$ +0.75 Axis 180	+1.25 $\bigcirc$ +1.00 Axis 180
+1.50 Cyl. Axis 90	+1.50 $\bigcirc$ +0.25 Axis 180	+1.50 $\bigcirc$ +0.50 Axis 180	+1.50 $\bigcirc$ +0.75 Axis 180
+1.75 Cyl. Axis 90	+1.75 Sphere	+1.75 $\bigcirc$ +0.25 Axis 180	+1.75 $\bigcirc$ +0.50 Axis 180
+2.00 Cyl. Axis 90	+1.75 $\bigcirc$ +0.25 Axis 90	+2.00 Sphere	+2.00 $\bigcirc$ +0.25 Axis 180
+2.25 Cyl. Axis 90	+1.75 $\bigcirc$ +0.50 Axis 90	+2.00 $\bigcirc$ +0.25 Axis 90	+2.25 Sphere
+2.50 Cyl. Axis 90	+1.75 $\bigcirc$ +0.75 Axis 90	+2.00 $\bigcirc$ +0.50 Axis 90	+2.25 $\bigcirc$ +0.25 Axis 90
+2.75 Cyl. Axis 90	+1.75 $\bigcirc$ +1.00 Axis 90	+2.00 $\bigcirc$ +0.75 Axis 90	+2.25 $\bigcirc$ +0.50 Axis 90
+3.00 Cyl. Axis 90	+1.75 $\bigcirc$ +1.25 Axis 90	+2.00 $\bigcirc$ +1.00 Axis 90	+2.25 $\bigcirc$ +0.75 Axis 90

For crossed cylinders minus on minus ($-\bigcirc-$) use this same chart, but instead of using plus (+) signs use minus ($-$) signs.

Transposition Table No. 4.
Crossed Cylinders (+ $\bigcirc$ + and - $\bigcirc$ -)

	+2.50 Cyl. Axis 180	+2.75 Cyl. Axis 180	+3.00 Cyl. Axis 180
+0.25 Cyl. Axis 90	+0.25 $\bigcirc$ +2.25 Axis 180	+0.25 $\bigcirc$ +2.50 Axis 180	+0.25 $\bigcirc$ +2.75 Axis 180
+0.50 Cyl. Axis 90	+0.50 $\bigcirc$ +2.00 Axis 180	+0.50 $\bigcirc$ +2.25 Axis 180	+0.50 $\bigcirc$ +2.50 Axis 180
+0.75 Cyl. Axis 90	+0.75 $\bigcirc$ +1.75 Axis 180	+0.75 $\bigcirc$ +2.00 Axis 180	+0.75 $\bigcirc$ +2.25 Axis 180
+1.00 Cyl. Axis 90	+1.00 $\bigcirc$ +1.50 Axis 180	+1.00 $\bigcirc$ +1.75 Axis 180	+1.00 $\bigcirc$ +2.00 Axis 180
+1.25 Cyl. Axis 90	+1.25 $\bigcirc$ +1.25 Axis 180	+1.25 $\bigcirc$ +1.50 Axis 180	+1.25 $\bigcirc$ +1.75 Axis 180
+1.50 Cyl. Axis 90	+1.50 $\bigcirc$ +1.00 Axis 180	+1.50 $\bigcirc$ +1.25 Axis 180	+1.50 $\bigcirc$ +1.50 Axis 180
+1.75 Cyl. Axis 90	+1.75 $\bigcirc$ +0.75 Axis 180	+1.75 $\bigcirc$ +1.00 Axis 180	+1.75 $\bigcirc$ +1.25 Axis 180
+2.00 Cyl. Axis 90	+2.00 $\bigcirc$ +0.50 Axis 180	+2.00 $\bigcirc$ +0.75 Axis 180	+2.00 $\bigcirc$ +1.00 Axis 180
+2.25 Cyl. Axis 90	+2.25 $\bigcirc$ +0.25 Axis 180	+2.25 $\bigcirc$ +0.50 Axis 180	+2.25 $\bigcirc$ +0.75 Axis 180
+2.50 Cyl. Axis 90	+2.50 Sphere	+2.50 $\bigcirc$ +0.25 Axis 180	+2.50 $\bigcirc$ +0.50 Axis 180
+2.75 Cyl. Axis 90	+2.50 $\bigcirc$ +0.25 Axis 90	+2.75 Sphere	+2.75 $\bigcirc$ +0.25 Axis 180
+3.00 Cyl. Axis 90	+2.50 $\bigcirc$ +0.50 Axis 90	+2.75 $\bigcirc$ +0.25 Axis 90	+3.00 Sphere

For crossed cylinders minus on minus (- $\bigcirc$ -) use this same chart. but instead of using plus (+) signs use minus (-) signs.

TRANSPOSING PLUS ON MINUS (+ $\ominus$ —) and MINUS ON PLUS (— $\ominus$ +).

To transpose a cross cylinder (+ $\ominus$ —) or (— $\ominus$ +) to its equivalent in a compound, use power and sign of one of the cylinders of your original prescription for the sphere of your transposed lens, or compound.

After this has been done, add the power of both cylinders of your original prescription together; this total is the cylinder of your transposed lens or compound.

For the sign and axis of your transposed lens, or compound, use sign and the axis of the cylinder that was not used for the sphere of your compound.

Example No. 1 (Plus (+) Cyl. used for sphere)

Original Prescription +2.00 Cyl. Axis $90^\circ \ominus$ —1.50 Cyl. 180°
Sphere of Compound +2.00

Now Add

Power of 1st Cylinder 2.00

Power of 2nd Cylinder 1.50

Total 3.50 Cyl.

Use (—) sign for Cylinder and axis of second Cylinder — 180° sign and power of cylinder not used for sphere.

Complete Prescription +2.00 Sph. $\ominus$ —3.50 Cyl. Axis 180°
or —1.50 Sph. $\ominus$ +3.50 Cyl. Axis 90°

Example No. 1 a (Minus (—) Cyl. used for sphere)

Original Prescription +2.00 Cyl. Axis $90^\circ \ominus$ —1.50 Cyl. 180°
Sphere of Compound —1.50

Now Add

Power of 1st Cylinder 2.00

Power of 2nd Cylinder 1.50

Total 3.50 Cyl.

Use (+) sign for cylinder and axis of 1st cylinder— 90° sign and power of cylinder not used for sphere.

Complete Prescription —1.50 Sph. $\ominus$ +3.50 Cyl. Axis 90°
or +2.00 Sph. $\ominus$ —3.50 Cyl. Axis 180°

Note—Compare the final prescription after transposing Example 1 and 1-a, which are the same, though in one instance we used the first cylinder for sphere, and another instance we used the second cylinder for sphere of compound.

Transposition Table No. 1.
Crossed Cylinders (+○— and —○+)

	+0.25 Cyl. Axis 180	+0.50 Cyl. Axis 180	+0.75 Cyl. Axis 180
—0.25 Cyl. Axis 90	+0.25○—0.50 Axis 90	+0.50○—0.75 Axis 90	+0.75○—1.00 Axis 90
—0.50 Cyl. Axis 90	+0.25○—0.75 Axis 90	+0.50○—1.00 Axis 90	+0.75○—1.25 Axis 90
—0.75 Cyl. Axis 90	+0.25○—1.00 Axis 90	+0.50○—1.25 Axis 90	+0.75○—1.50 Axis 90
—1.00 Cyl. Axis 90	+0.25○—1.25 Axis 90	+0.50○—1.50 Axis 90	+0.75○—1.75 Axis 90
—1.25 Cyl. Axis 90	+0.25○—1.50 Axis 90	+0.50○—1.75 Axis 90	+0.75○—2.00 Axis 90
—1.50 Cyl. Axis 90	+0.25○—1.75 Axis 90	+0.50○—2.00 Axis 90	+0.75○—2.25 Axis 90
—1.75 Cyl. Axis 90	+0.25○—2.00 Axis 90	+0.50○—2.25 Axis 90	+0.75○—2.50 Axis 90
—2.00 Cyl. Axis 90	+0.25○—2.25 Axis 90	+0.50○—2.50 Axis 90	+0.75○—2.75 Axis 90
—2.25 Cyl. Axis 90	+0.25○—2.50 Axis 90	+0.50○—2.75 Axis 90	+0.75○—3.00 Axis 90
—2.50 Cyl. Axis 90	+0.25○—2.75 Axis 90	+0.50○—3.00 Axis 90	+0.75○—3.25 Axis 90
—2.75 Cyl. Axis 90	+0.25○—3.00 Axis 90	+0.50○—3.25 Axis 90	+0.75○—3.50 Axis 90
—3.00 Cyl. Axis 90	+0.25○—3.25 Axis 90	+0.50○—3.50 Axis 90	+0.75○—3.75 Axis 90

For crossed plus (+) cylinders at axis 90 and minus (—) cylinders at axis 180, use axis opposite to that given on table.

Transposition Table No. 2.
Crossed Cylinders (+ $\ominus$ — and — $\ominus$ +))

	+1.00 Cyl. Axis 180	+1.25 Cyl. Axis 180	+1.50 Cyl. Axis 180
—0.25 Cyl. Axis 90	+1.00 $\ominus$ —1.25 Axis 90	+1.25 $\ominus$ —1.50 Axis 90	+1.50 $\ominus$ —1.75 Axis 90
—0.50 Cyl. Axis 90	+1.00 $\ominus$ —1.50 Axis 90	+1.25 $\ominus$ —1.75 Axis 90	+1.50 $\ominus$ —2.00 Axis 90
—0.75 Cyl. Axis 90	+1.00 $\ominus$ —1.75 Axis 90	+1.25 $\ominus$ —2.00 Axis 90	+1.50 $\ominus$ —2.25 Axis 90
—1.00 Cyl. Axis 90	+1.00 $\ominus$ —2.00 Axis 90	+1.25 $\ominus$ —2.25 Axis 90	+1.50 $\ominus$ —2.50 Axis 90
—1.25 Cyl. Axis 90	+1.00 $\ominus$ —2.25 Axis 90	+1.25 $\ominus$ —2.50 Axis 90	+1.50 $\ominus$ —2.75 Axis 90
—1.50 Cyl. Axis 90	+1.00 $\ominus$ —2.50 Axis 90	+1.25 $\ominus$ —2.75 Axis 90	+1.50 $\ominus$ —3.00 Axis 90
—1.75 Cyl. Axis 90	+1.00 $\ominus$ —2.75 Axis 90	+1.25 $\ominus$ —3.00 Axis 90	+1.50 $\ominus$ —3.25 Axis 90
—2.00 Cyl. Axis 90	+1.00 $\ominus$ —3.00 Axis 90	+1.25 $\ominus$ —3.25 Axis 90	+1.50 $\ominus$ —3.50 Axis 90
—2.25 Cyl. Axis 90	+1.00 $\ominus$ —3.25 Axis 90	+1.25 $\ominus$ —3.50 Axis 90	+1.50 $\ominus$ —3.75 Axis 90
—2.50 Cyl. Axis 90	+1.00 $\ominus$ —3.50 Axis 90	+1.25 $\ominus$ —3.75 Axis 90	+1.50 $\ominus$ —4.00 Axis 90
—2.75 Cyl. Axis 90	+1.00 $\ominus$ —3.75 Axis 90	+1.25 $\ominus$ —4.00 Axis 90	+1.50 $\ominus$ —4.25 Axis 90
—3.00 Cyl. Axis 90	+1.00 $\ominus$ —4.00 Axis 90	+1.25 $\ominus$ —4.25 Axis 90	+1.50 $\ominus$ —4.50 Axis 90

For crossed plus (+) cylinders at axis 90 and minus (—) cylinders at axis 180, use axis opposite to that given on table.

Transposition Table No. 3.
Crossed Cylinders (+ $\ominus$ — and — $\ominus$ +))

	+1.75 Cyl. Axis 180	+2.00 Cyl. Axis 180	+2.25 Cyl. Axis 180
—0.25 Cyl. Axis 90	+1.75 $\ominus$ —2.00 Axis 90	+2.00 $\ominus$ —2.25 Axis 90	+2.25 $\ominus$ —2.50 Axis 90
—0.50 Cyl. Axis 90	+1.75 $\ominus$ —2.25 Axis 90	+2.00 $\ominus$ —2.50 Axis 90	+2.25 $\ominus$ —2.75 Axis 90
—0.75 Cyl. Axis 90	+1.75 $\ominus$ —2.50 Axis 90	+2.00 $\ominus$ —2.75 Axis 90	+2.25 $\ominus$ —3.00 Axis 90
—1.00 Cyl. Axis 90	+1.75 $\ominus$ —2.75 Axis 90	+2.00 $\ominus$ —3.00 Axis 90	+2.25 $\ominus$ —3.25 Axis 90
—1.25 Cyl. Axis 90	+1.75 $\ominus$ —3.00 Axis 90	+2.00 $\ominus$ —3.25 Axis 90	+2.25 $\ominus$ —3.50 Axis 90
—1.50 Cyl. Axis 90	+1.75 $\ominus$ —3.25 Axis 90	+2.00 $\ominus$ —3.50 Axis 90	+2.25 $\ominus$ —3.75 Axis 90
—1.75 Cyl. Axis 90	+1.75 $\ominus$ —3.50 Axis 90	+2.00 $\ominus$ —3.75 Axis 90	+2.25 $\ominus$ —4.00 Axis 90
—2.00 Cyl. Axis 90	+1.75 $\ominus$ —3.75 Axis 90	+2.00 $\ominus$ —4.00 Axis 90	+2.25 $\ominus$ —4.25 Axis 90
—2.25 Cyl. Axis 90	+1.75 $\ominus$ —4.00 Axis 90	+2.00 $\ominus$ —4.25 Axis 90	+2.25 $\ominus$ —4.50 Axis 90
—2.50 Cyl. Axis 90	+1.75 $\ominus$ —4.25 Axis 90	+2.00 $\ominus$ —4.50 Axis 90	+2.25 $\ominus$ —4.75 Axis 90
—2.75 Cyl. Axis 90	+1.75 $\ominus$ —4.50 Axis 90	+2.00 $\ominus$ —4.75 Axis 90	+2.25 $\ominus$ —5.00 Axis 90
—3.00 Cyl. Axis 90	+1.75 $\ominus$ —4.75 Axis 90	+2.00 $\ominus$ —5.00 Axis 90	+2.25 $\ominus$ —5.25 Axis 90

For crossed plus (+) cylinders at axis 90 and minus (—) cylinders at axis 180, use axis opposite to that given on table.

Transposition Table No. 4.
Crossed Cylinders (+○— and —○+)

	+2.50 Cyl. Axis 180	+2.75 Cyl. Axis 180	+3.00 Cyl. Axis 180
—0.25 Cyl. Axis 90	+2.50○—2.75 Axis 90	+2.75○—3.00 Axis 90	+3.00○—3.25 Axis 90
—0.50 Cyl. Axis 90	+2.50○—3.00 Axis 90	+2.75○—3.25 Axis 90	+3.00○—3.50 Axis 90
—0.75 Cyl. Axis 90	+2.50○—3.25 Axis 90	+2.75○—3.50 Axis 90	+3.00○—3.75 Axis 90
—1.00 Cyl. Axis 90	+2.50○—3.50 Axis 90	+2.75○—3.75 Axis 90	+3.00○—4.00 Axis 90
—1.25 Cyl. Axis 90	+2.50○—3.75 Axis 90	+2.75○—4.00 Axis 90	+3.00○—4.25 Axis 90
—1.50 Cyl. Axis 90	+2.50○—4.00 Axis 90	+2.75○—4.25 Axis 90	+3.00○—4.50 Axis 90
—1.75 Cyl. Axis 90	+2.50○—4.25 Axis 90	+2.75○—4.50 Axis 90	+3.00○—4.75 Axis 90
—2.00 Cyl. Axis 90	+2.50○—4.50 Axis 90	+2.75○—4.75 Axis 90	+3.00○—5.00 Axis 90
—2.25 Cyl. Axis 90	+2.50○—4.75 Axis 90	+2.75○—5.00 Axis 90	+3.00○—5.25 Axis 90
—2.50 Cyl. Axis 90	+2.50○—5.00 Axis 90	+2.75○—5.25 Axis 90	+3.00○—5.50 Axis 90
—2.75 Cyl. Axis 90	+2.50○—5.25 Axis 90	+2.75○—5.50 Axis 90	+3.00○—5.75 Axis 90
—3.00 Cyl. Axis 90	+2.50○—5.50 Axis 90	+2.75○—5.75 Axis 90	+3.00○—6.00 Axis 90

For crossed plus (+) cylinders at axis 90 and minus (—) cylinders at axis 180, use axis opposite to that given on table.

CHAPTER VIII.

CURVES

We will now examine the rules for determining the curves to be ground on each side of the lens in order to produce the proper prescription, sphere and cylinder.

This is necessary especially in connection with all kinds of bifocals, in order to know the curves for the segment side.

What then are these rules?

On flat lenses, plain cylinders and sphero-cylinders, there is no difficulty; as the plain cylinders have a plano on one side, and the curve of the sphere on the compound is the same power as the sphere itself.

Example No. 1 (Flat)

R + 2.00 Sph. $\bigcirc$ + 1.00 Cyl. Axis 90°
 + 2.00 Sph. would be + 2.00 Curve on one side with
 Plano Axis 90° and + 1.00 Axis 180° on opposite side.

Example No. 2 (Flat)

R + 1.25 Sph. $\bigcirc$ + 0.50 Cyl. Axis 70°
 + 1.25 Sph. would be a + 1.25 Curve on one side with
 Plano Axis 70° and + 0.50 Axis 160° on opposite side.

Example No. 3 (Flat)

R - 1.75 Sph. $\bigcirc$ + 2.50 Cyl. Axis 180°
 - 1.75 Sph. would be - 1.75 Curve on one side with
 Plano Axis 180° and + 2.50 Axis 90° on opposite side.

Example No. 4 (Flat)

R - 3.00 Sph. $\bigcirc$ - 1.50 Cyl. Axis 60°

— 3.00 Sph. would be — 3.00 Curve on one side with Plano Axis 60° and — 1.50 Axis 150° on opposite side.

On flat prescriptions made up in P. C. X., P. C. C., D. C. X., or D. C. C., the curve ground is not the spherical power as it is in the case of plain cylinders and flat compounds.

If the prescription is to be ground P. C. X., then we must add the power of the sphere to 1.25, as all P. C. X. lenses have a — 1.25 Curve on the inside.

Examples:—

1. + 0.50 Sph. would be — 1.25 Curve inside with + 1.75 Curve outside.

2. + 1.75 Sph. would be — 1.25 Curve inside with + 3.00 Curve outside.

3. + 3.00 Sph. would be — 1.25 Curve inside with + 4.25 Curve outside.

If the prescription is to be ground P. C. C., then add the power of the sphere to 1.25, the same as with P. C. X., as all P. C. C. lenses have a + 1.25 Curve on the outside. The only difference between P. C. X. and P. C. C. is that the signs are opposite as follows:

Examples:—

1. — 0.75 Sph. would be + 1.25 Curve outside with — 2.00 Curve inside.

2. — 1.50 Sph. would be + 1.25 Curve outside with — 2.75 Curve inside.

3. — 3.50 Sph. would be + 1.25 Curve outside with — 4.75 Curve inside.

PERISCOPIC CONVEX

(P. C. X.)

R +4.00 Sphere

Outside
Curve
+5.25Inside
Curve
-1.25**PERISCOPIC CONCAVE**

(P. C. C.)

R -4.00 Sphere

Outside
Curve
+1.25Inside
Curve
-5.25

On D. C. X. and D. C. C. prescriptions you cut the power of the sphere in half and grind the same curve on each side.

Examples:—

1. + 10.00 Sph. would have + 5.00 D. Curve on each side.
2. + 14.00 Sph. would have + 7.00 D. Curve on each side.
3. + 18.00 Sph. would have + 9.00 D. Curve on each side.
4. — 8.00 Sph. would have — 4.00 D. Curve on each side.
5. — 12.00 Sph. would have — 6.00 D. Curve on each side.
6. — 16.00 Sph. would have — 8.00 D. Curve on each side.

DOUBLE CONVEX

(D. C. X.)

R +12.00 Sphere

Outside
Curve
+6.00Inside
Curve
+6.00**DOUBLE CONCAVE**

(D. C. C.)

R -12.00 Sphere

Outside
Curve
-6.00Inside
Curve
-6.00

To determine the curves to be ground on toric lenses we do so by adding or subtracting the power of the sphere from the base Curve.

TORIC COMPOUNDS

(+⊖+)

Ground on Plus 6.00 D. B. C. Cyls.

To find the curves on this formula, subtract the power of the sphere from the base curve of the cylinder, which is 6.00 D., and use sign opposite to that of the base curve.

Example No. 1

R + 1.00 Sph. ⊖ + 1.00 Cyl. Axis 180°
 Base Curve 6.00 D.
 Subtract Sph. 1.00 D.

Opposite Sign—5.00 D. Curve on Spherical Side

Example No. 2

R + 2.00 Sph. ⊖ + 0.75 Cyl. Axis 60°
 Base Curve 6.00 D.
 Subtract Sph. 2.00 D.

Opposite Sign—4.00 D. Curve on Spherical Side

Example No. 3

R + 3.50 Sph. ⊖ + 2.75 Cyl. Axis 50°
 Base Curve 6.00 D.
 Subtract Sph. 3.50 D.

Opposite Sign—2.50 D. Curve on Spherical Side

TORIC COMPOUNDS

(+⊖—)

Ground on Minus 6.00 D. B. C. Cyls.

On plus on minus prescription, to determine the curve to be ground you add the power of your sphere to the base curve of the cylinder, which is 6.00 D., and use sign opposite to that of the base curve.

Example No. 1

$$R + 0.50 \text{ Sph. } \ominus - 1.25 \text{ Cyl. Axis } 10^\circ$$

Base Curve	6.00 D.
Add Sph.	0.50 D.

Opposite sign + 6.50 D. Curve on Spherical side.

Example No. 2

$$R + 2.00 \text{ Sph. } \ominus - 2.00 \text{ Cyl. Axis } 70^\circ$$

Base Curve	6.00 D.
Add Sph.	2.00 D.

Opposite sign + 8.00 D. Curve on Spherical Side

Example No. 3

$$R + 3.50 \text{ Sph. } \ominus - 3.00 \text{ Cyl. Axis } 40^\circ$$

Base Curve	6.00 D.
Add Sph.	3.50 D.

Opposite sign + 9.50 D. Curve on Spherical Side

TORIC COMPOUNDS

($\ominus \ominus +$)

Ground on Plus 6.00 D. B. C. Cyls.

To determine the curves that should be ground on such a prescription you add the power of the sphere to the base curve of the cylinder, which is 6.00 D., and use sign opposite to that of the base curve.

Example No. 1

$$R - 1.25 \text{ Sph. } \ominus + 1.50 \text{ Cyl. Axis } 25^\circ$$

Base Curve	6.00 D.
Add Sph.	1.25 D.

Opposite sign — 7.25 D. Curve on Spherical Side

Example No. 2R — 2.00 Sph. $\bigcirc$ + 1.75 Cyl. Axis 40°

Base Curve 6.00 D.

Add Sph. 2.00 D.

Opposite sign — 8.00 D. Curve on Spherical Side

Example No. 3R — 3.00 Sph. $\bigcirc$ + 1.00 Cyl. Axis 70°

Base Curve 6.00 D.

Add Sph. 3.00 D.

Opposite sign — 9.00 D. Curve on Spherical Side

TORIC COMPOUNDS $(-\bigcirc-)$ **Ground on Minus 6.00 D. B. C. Cyls.**

In figuring the curves on this formula you subtract the power of the sphere from the base curve of the cylinder, which is 6.00 D., and use sign opposite to that of base curve.

Example No. 1R — 0.50 Sph. $\bigcirc$ — 1.00 Cyl. Axis 15°

Base Curve 6.00 D.

Subtract Sph. 0.50 D.

Opposite sign + 5.50 D. Curve on Spherical Side

Example No. 2R — 1.75 Sph. $\bigcirc$ — 2.00 Cyl. Axis 100°

Base Curve 6.00 D.

Subtract Sph. 1.75 D.

Opposite sign + 4.25 D. Curve on Spherical Side

Example No. 3

R — 3.00 Sph.  — 2.75 Cyl. Axis 170°

Base Curve 6.00 D.

Subtract Sph. 3.00 D.

Opposite sign + 3.00 D. Curve on Spherical Side

PLAIN TORIC CYLINDERS

(+ and —)

On plain cylinders the curve that is ground on the opposite side from the cylinder is the same curve as the base curve of the cylinders.

	Cylinder	Base Curve	Grind
Example No. 1	—3.00 D.	—3.00 D.	+3.00 D.
Example No. 2	—1.75 D.	—6.00 D.	+6.00 D.
Example No. 3	—2.00 D.	—9.00 D.	+9.00 D.
Example No. 4	+0.50 D.	+3.00 D.	—3.00 D.
Example No. 5	+2.00 D.	+6.00 D.	—6.00 D.
Example No. 6	+0.75 D.	+9.00 D.	—9.00 D.

We will not consider cross cylinders here, as they can be transposed into its equivalent in a compound. As mentioned previously, the base curve is the weaker curve on the cylinder side of the lens.

TORIC SPHERES

(Meniscus)

(+ and —)

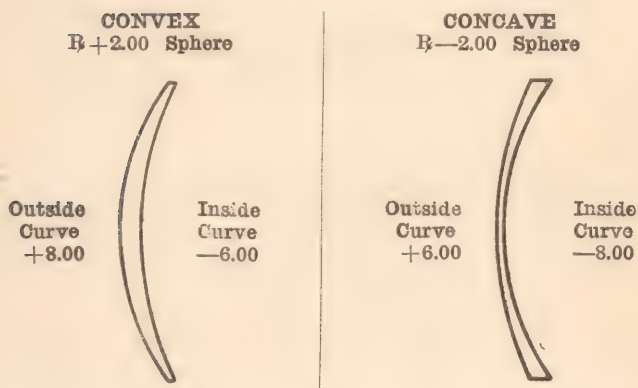
To determine the curves to be ground on spherical lenses is very simple; on plus spheres (Meniscus convex) simply add the power of the sphere to the curve on minus side and use opposite sign (+) as follows:

Sphere	Inside Curve	Outside Curve
+6.00	—3.00	+9.00
+2.00	—6.00	+8.00
+3.50	—6.00	+9.50

On minus spheres, (Meniscus concave), you add the power of the sphere to the curve on the plus side and use opposite sign (—) as follows:

Sphere	Outside Curve	Inside Curve
—6.00	+3.00	—9.00
—2.00	+6.00	—8.00
—3.50	+6.00	—9.50

MENISCUS



CHAPTER IX.

MISCELLANEOUS

R signifies prescription.

O. D. signifies right eye.

O. S. signifies left eye.

O. U. signifies both eyes.

This sign “ $\ominus$ ” signifies to combine.

This sign “ $\triangle$ ” signifies prism.

A sphere is a lens with the same curve in every meridian.

A cylinder is a lens with two different curves on the same side but in opposite meridians.

P. C. X. signifies periscopic convex.

P. C. X. lens is a lens with a — 1.25 curve on one side, and any plus curve from + 1.25 up on the opposite side.

P. C. C. signifies periscopic concave.

P. C. C. lens is a lens with a + 1.25 curve on one side, and any minus curve from —1.25 up on the opposite side.

D. C. X. signifies double convex.

D. C. X. lens is a lens with a plus or convex curve of the same power on each side.

D. C. C. signifies double concave.

D. C. C. lens is a lens with a minus or concave curve of the same power on each side.

A base curve is the weaker curve on the cylinder side of a lens.

Now that you have gone through the rules on Transpositions, try a few problems and transpose the following prescriptions:

$+0.25 \text{ Sph. } \ominus +1.25 \text{ Cyl. Axis } 85^\circ$
 $+1.00 \text{ Sph. } \ominus +0.75 \text{ Cyl. Axis } 60^\circ$
 $+2.00 \text{ Sph. } \ominus +2.00 \text{ Cyl. Axis } 175^\circ$
 $+1.75 \text{ Sph. } \ominus -1.25 \text{ Cyl. Axis } 75^\circ$
 $+0.75 \text{ Sph. } \ominus -0.50 \text{ Cyl. Axis } 180^\circ$
 $+2.50 \text{ Sph. } \ominus -1.75 \text{ Cyl. Axis } 25^\circ$
 $+1.75 \text{ Sph. } \ominus -2.50 \text{ Cyl. Axis } 90^\circ$
 $+0.25 \text{ Sph. } \ominus -0.75 \text{ Cyl. Axis } 35^\circ$
 $+0.75 \text{ Sph. } \ominus -1.75 \text{ Cyl. Axis } 5^\circ$
 $-1.25 \text{ Sph. } \ominus -0.75 \text{ Cyl. Axis } 160^\circ$
 $-0.75 \text{ Sph. } \ominus -1.00 \text{ Cyl. Axis } 20^\circ$
 $-3.00 \text{ Sph. } \ominus -1.25 \text{ Cyl. Axis } 105^\circ$
 $-0.50 \text{ Sph. } \ominus +1.00 \text{ Cyl. Axis } 65^\circ$
 $-1.25 \text{ Sph. } \ominus +1.50 \text{ Cyl. Axis } 80^\circ$
 $-2.00 \text{ Sph. } \ominus +2.50 \text{ Cyl. Axis } 60^\circ$
 $-3.00 \text{ Sph. } \ominus +1.75 \text{ Cyl. Axis } 15^\circ$
 $-1.75 \text{ Sph. } \ominus +0.25 \text{ Cyl. Axis } 10^\circ$
 $-0.75 \text{ Sph. } \ominus +0.50 \text{ Cyl. Axis } 90^\circ$
 $\quad \quad \quad +0.75 \text{ Cyl. Axis } 180^\circ$
 $\quad \quad \quad -1.25 \text{ Cyl. Axis } 50^\circ$

$+0.50 \text{ Cyl. Axis } 90^\circ \ominus +1.00 \text{ Cyl. Axis } 180^\circ$
 $-1.75 \text{ Cyl. Axis } 90^\circ \ominus -1.00 \text{ Cyl. Axis } 180^\circ$
 $+1.25 \text{ Cyl. Axis } 90^\circ \ominus -1.75 \text{ Cyl. Axis } 180^\circ$
 $-2.00 \text{ Cyl. Axis } 90^\circ \ominus +3.25 \text{ Cyl. Axis } 180^\circ$

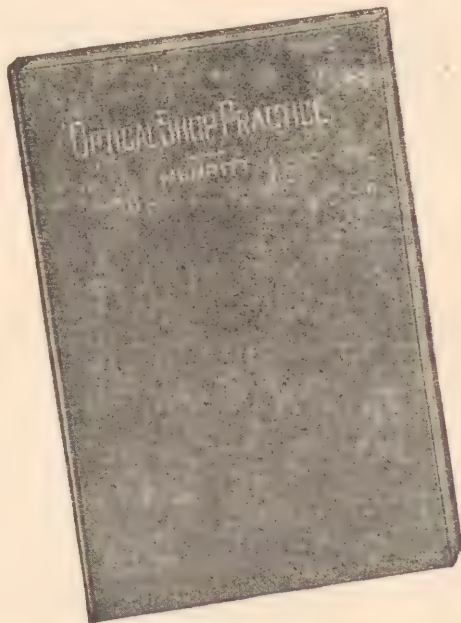
Don't depend on your memory, if you are not sure consult the Transposition Tables.

OPTICAL SHOP PRACTICE

Written in Simplified Language.

Covers Every Step from Start to Finish
in Lens Grinding

Thoroughly Illustrated.



By W. W. Merritt

EDW. J. LUECK—Collaborator

Price \$2.00

PUBLISHED BY

THE PROFESSIONAL PRESS, Inc.

17 No. Wabash Ave.

CHICAGO

AUG 3 1922

WW 352 L948t 1922

52320090R



NLM 05274161 1

NATIONAL LIBRARY OF MEDICINE